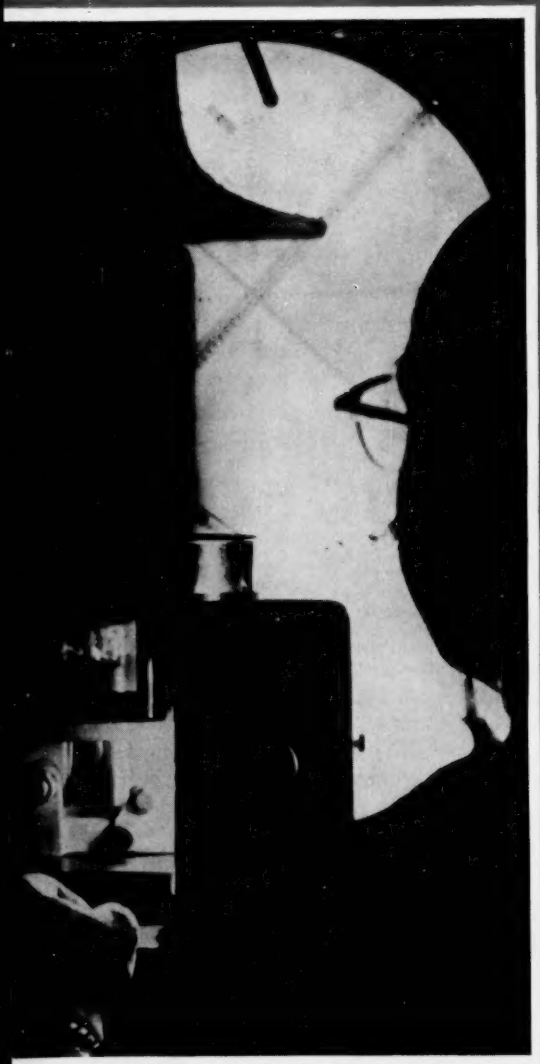


Chemical Week

August 11, 1956

Price 35 cents



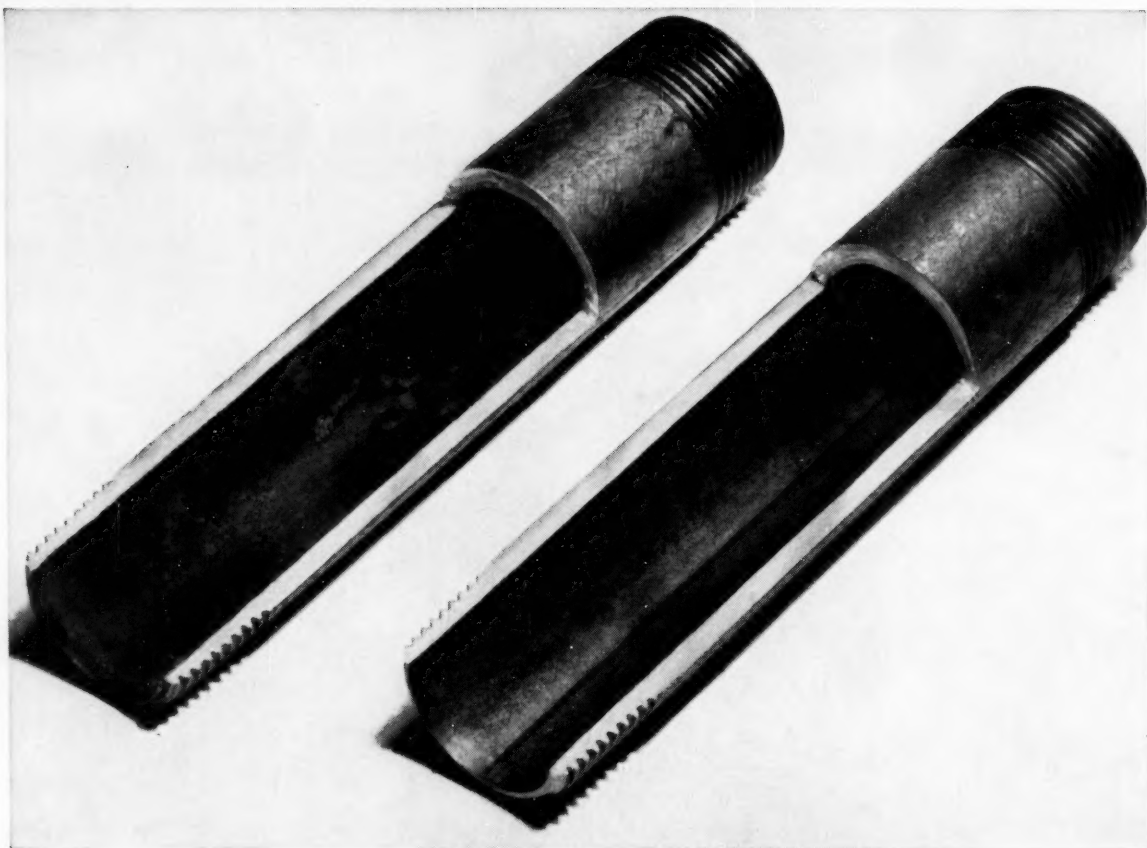
Company earnings are still rising at a fast clip—but profit margins aren't keeping pace p. 21

What's the secret of successful selling? Dow sales training puts the accent on empathy . . . p. 44

Lots of interest in incentives for researchers. One firm's idea: expense-paid Bermuda trips . . p. 53

► It works both ways—specialties open new uses for cans; can making devours torrent of specialties p. 66

Look for higher ethanol prices. When, why, depends on fermentation-synthetic supplies . . . p. 76



CORROSION PREVENTED with SOLVAY SODIUM NITRITE

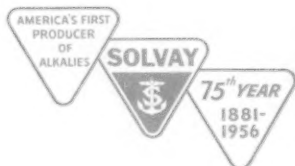
With a low and *economical* concentration of Solvay® Sodium Nitrite you can prevent corrosion in circulating water systems, on metal parts in process and on raw sheets, tubes or bars in storage. The corrosive attack on the pipe at the left, above, is the result of plain water. The pipe on the right was subjected to identical conditions except that the water contained 500 ppm of sodium nitrite.

Solvay Sodium Nitrite works to halt or prevent corrosion by forming an invisible oxide coating on metal surfaces. It is effective with iron and steel and has been reported to suppress the degradation of aluminum, tin, monel, copper and brass. It is non-toxic in the concentrations normally

used to prevent corrosion.

Our booklet, "Sodium Nitrite for Rust and Corrosion Prevention," gives details on how sodium nitrite, alone or in combination with other materials, prevents corrosion in a wide variety of applications. Write for your free* copy today.

*In western hemisphere countries only.



SOLVAY PROCESS DIVISION

ALLIED CHEMICAL & DYE CORPORATION

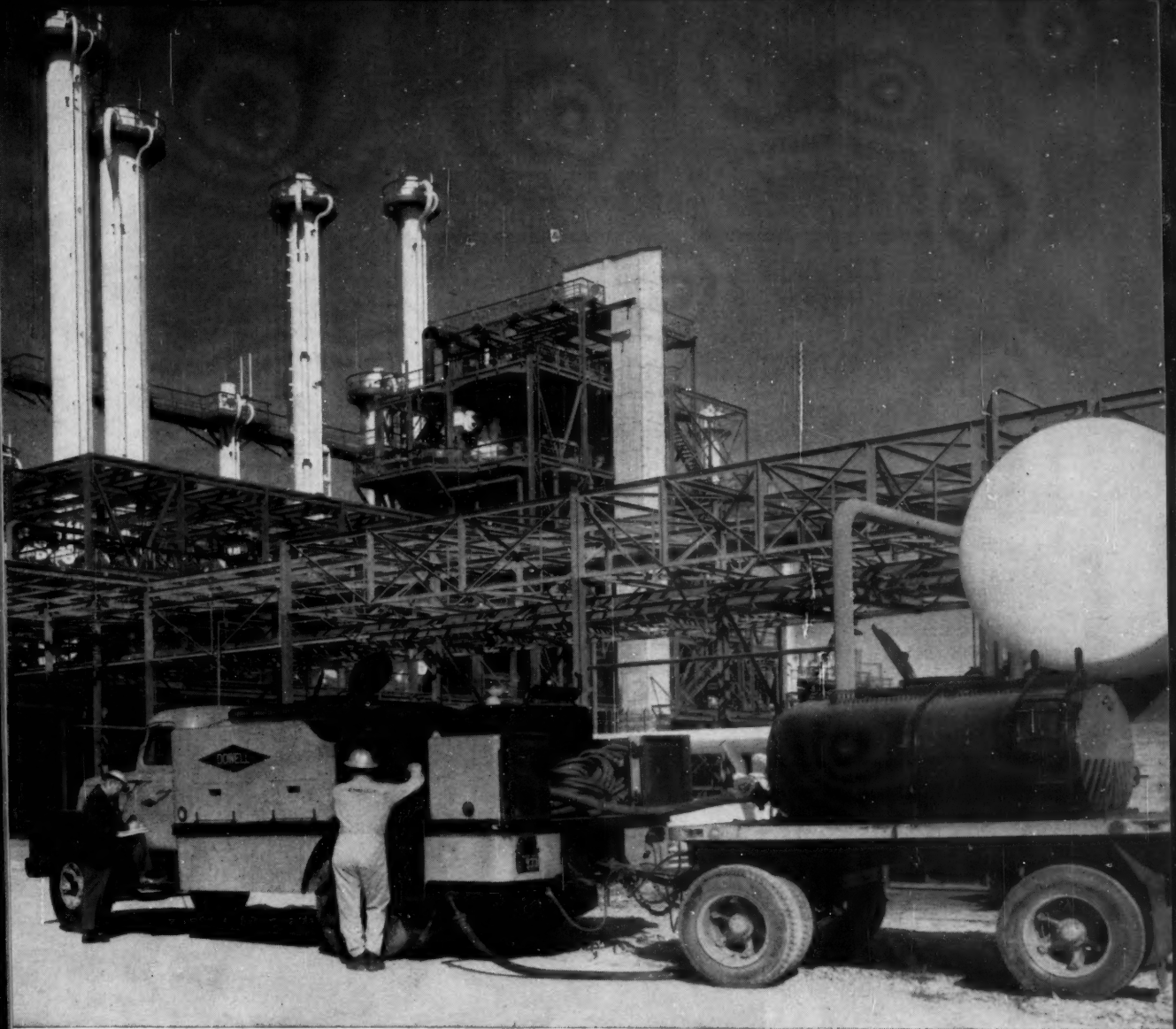
61 Broadway, New York 6, N. Y.



BRANCH SALES OFFICES:

Boston • Charlotte • Chicago • Cincinnati • Cleveland • Detroit
Houston • New Orleans • New York • Philadelphia • Pittsburgh
St. Louis • Syracuse

Soda Ash • Snowflake® Crystals • Potassium Carbonate • Calcium Chloride • Ammonium Bicarbonate • Sodium Bicarbonate • Cleaning Compounds
Caustic Potash • Sodium Nitrite • Chlorine • Caustic Soda • Ammonium Chloride • Para-dichlorobenzene • Methyl Chloride • Ortho-dichlorobenzene
Monochlorobenzene • Carbon Tetrachloride • Chloroform • Methylene Chloride • Hydrogen Peroxide



IT'S NOT WORTH THE CHANCE —CLEAN IT RIGHT

Equipment that operates at less than peak efficiency eats into your company profits. Chemical cleaning can help stop these losses—but only when it's done by experts. Unless you rely on experts, you're taking a chance with your men and valuable equipment.

Dowell engineers understand your cleaning problems and they have the experience needed to solve them.

Thoroughly trained, they're backed by Dowell's 15 years' experience in removing troublesome scale deposits from virtually every kind of equipment in every kind of industry. They're aided, too, by a completely modern, fully staffed and excellently equipped research laboratory.

But, expert cleaning goes beyond keeping your equipment in top con-

dition. Dowell considers the safety of company personnel at every step of the operation. The safest possible working procedures are worked out with your safety personnel.

Call Dowell. Our engineers are always ready to discuss chemical cleaning problems with you. There's no obligation. Or write Dowell Incorporated, Tulsa 1, Okla., Dept H-92.

chemical cleaning service for industry

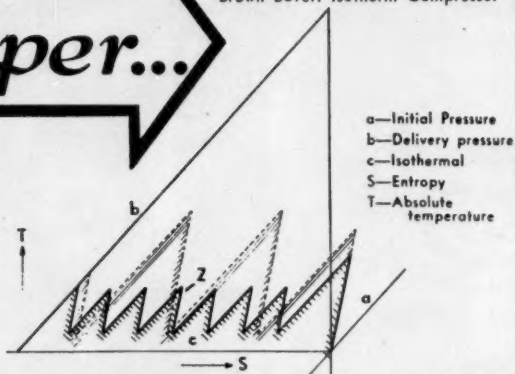
DOWELL

A SERVICE SUBSIDIARY OF THE DOW CHEMICAL COMPANY

it works on paper...

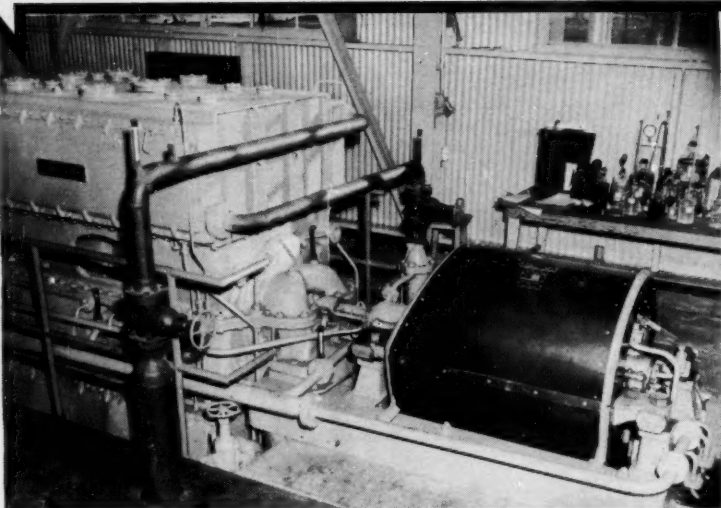
THE Brown Boveri Isotherm Compressor compresses the air along the solid line (Z) in nine stages with seven intermediate coolers. This arrangement justifies the name of "Isotherm" because compression approaches the ideal isothermal line. The broken line indicates the compression characteristic when only three intermediate coolers are used. The difference between the areas below the compression lines is a measure of the difference in required power input.

Compression Characteristics of Brown Boveri Isotherm Compressor



it works on the job...

THE 7,000 SCFM Brown Boveri Isotherm Compressor selected by Ketona Chemical Corporation, a jointly owned company of Alabama By-Products Corporation and Hercules Powder Company, for their new nitric acid plant at Ketona, Alabama, which was engineered and constructed by Fluor Corporation.



A BROWN BOVERI Isotherm Compressor unit makes possible major economies in any kind of chemical processing where large volumes of air at modest pressures is required.

Each unit is completely integrated equipment consisting of the inter-stage cooled isotherm compressor, a reaction-type highly efficient expander and a synchronous motor . . . all designed, manufactured and tested by Brown Boveri to operate as a "package" unit. Its design embodies more than a quarter century's experience in producing large air volume compressors for a wide variety of purposes *plus* a world-wide reputation for leadership in gas turbines and electrical power generating and distribution equipment.

Users of Brown Boveri Isotherm Compressors are assured of *greater efficiencies, substantial dollar savings in operational costs, longer life, dependable and trouble-free operation and far less maintenance* than with any comparable equipment on the market today!



BROWN BOVERI CORPORATION

19 RECTOR STREET • NEW YORK 6, N. Y.

Atlanta, Ga. • Birmingham, Ala. • Boston, Mass. • Buffalo, N. Y. • Butte, Mont. • Chicago, Ill. • Cleveland, O. • Denver, Colo. • Detroit, Mich. • Hamilton, O. • High Point, N. C. • Houston, Tex. • Jacksonville, Fla. • Kansas City, Mo. • Knoxville, Tenn. • Lewiston, Me. • Miami, Fla. • Minneapolis, Minn. • New Orleans, La. • New York, N.Y. • Pasadena, Cal. • Portland, Ore. • Roanoke, Va. • San Francisco, Cal. • Seattle, Wash. • Syracuse, N. Y. • Tucson, Ariz.

Chemical Week

TOP OF THE WEEK

August 11, 1956

Congress' last days brought a few surprises to chemical companies, such as the failure to act on a bill to give Congress veto power on sale of Navy paint plants p. 23

Here's the latest in Interhandel's attempt to gain control of General Anilinep. 24

Diversified eight ways, 48-year-old Metal & Thermit now puts stock up for public tradingp. 27

New sodium cell, now nearing large-scale tryout, uses thin stream of molten lead as a mobile cathode .p. 86

12 OPINION

14 UPCOMING MEETINGS

17 BUSINESS NEWSLETTER

21 Chemical earnings are still rising, but profit margins aren't what they used to be

22 Here are details of MCA's \$1-million scientist-education program

24 Technical Tape and 3M are squared off in two legal arenas

25 WASHINGTON ANGLES

27 ADMINISTRATION

30 Smog trouble? They've got it bad in Germany; firms there face heavy alteration costs as tough law is urged

39 CHARTING BUSINESS

44 SALES

Dow adopts 'role-playing' for sales training, accents psychology in just-overhauled program

46 Course in chemical tank trucking set to begin in two weeks

48 Next year's U.S. World Trade Fair will feature 3,000 exhibits

53 RESEARCH

Novel incentive plans aim to stimulate creativity, cut turnover of high-caliber researchers

56 Public Health Service pollution research marks time

61 TECHNOLOGY NEWSLETTER

66 SPECIALTIES

Chemical specialties figure in manufacture of nearly 40 million cans/year

73 Novel aerosol shoe polish gets ready for the 'big time'

76 MARKETS

Synthetic alcohol output can't match demand now, so fermentation material is filling the gap. But the future for fermentation alcohol is clouded

83 MARKET NEWSLETTER

86 PRODUCTION

94 Stick-on ticket streamlines inventory procedures

99 New oxidation and carbonization techniques may be key to British coal chemicals

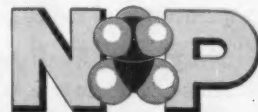
Analyze! AEPD

$\text{CH}_2\text{OHC}(\text{C}_2\text{H}_5)(\text{NH}_2)\text{CH}_2\text{OH}$



Samples of many Nitro-paraffins and derivatives available for study.

AEPD (2-Amino-2-ethyl-1,3-propanediol) is one of many versatile Nitroparaffins and derivatives now available in commercial quantity for industry. AEPD has been found useful as an emulsifying agent and raw material in many industries including chemical manufacturing, textiles, cosmetics, and chemical specialties. Learn how the NP's and derivatives may be of help in improving your present product or in creating new products.

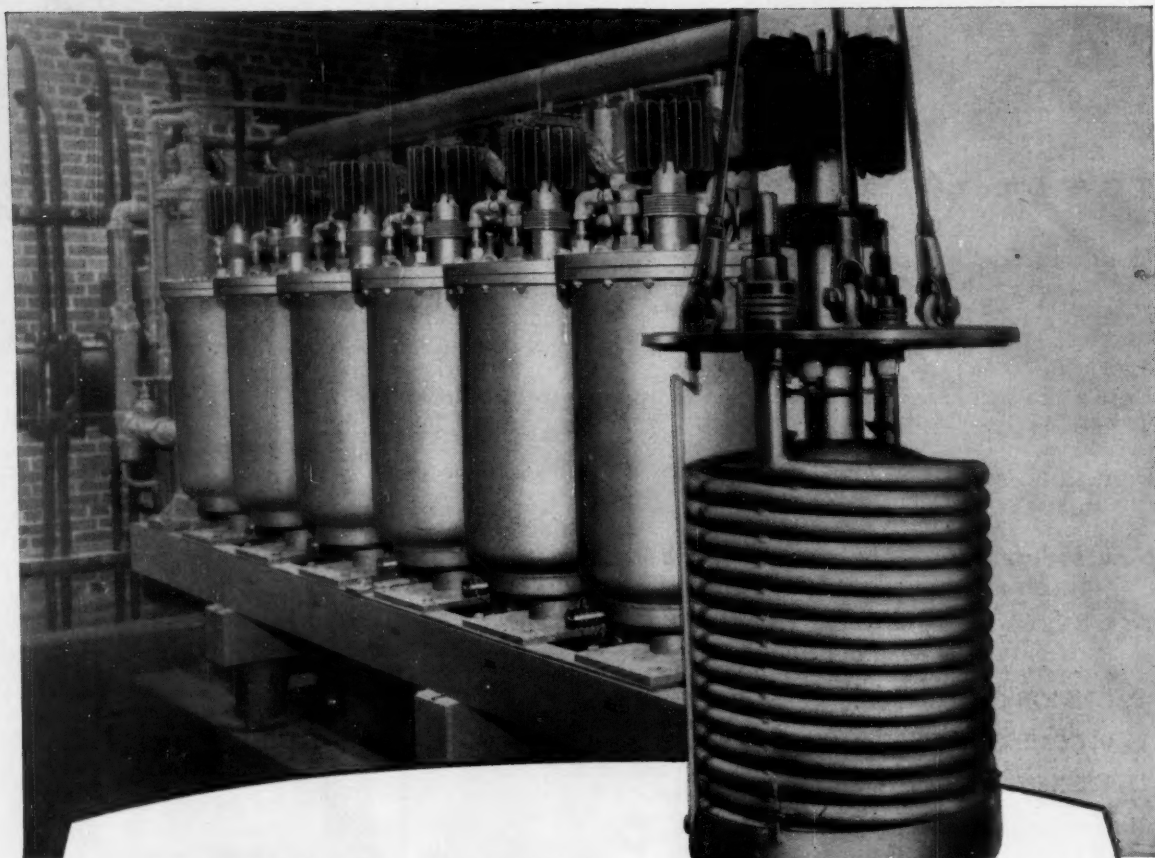


NITROPARAFFINS

Market Development Department
COMMERCIAL SOLVENTS CORP.
260 Madison Ave., N. Y. 16, N. Y.

Please send me a detailed data sheet and sample of AEPD plus information on other available NP samples.

NAME _____
TITLE _____
COMPANY _____
STREET _____
CITY _____ STATE _____



**Why Allis-Chalmers Cooling
Coil Design Means ...**

Better Rectifier Operation

More Efficient Heat Transfer results from internal cooling coil. The steel coil surrounds active parts, offering more cooling surface and better heat transfer than other types. Unit maintains more uniform temperature and mercury vapor pressure.

Simplified Maintenance results from Allis-Chalmers unique unit construction. All active components are attached to the anode plate for easy withdrawal, dismantling, and re-assembling — as illustrated above.

Positive Arc Barrier is formed by the cooling coil, which is insulated from the tank. The main arc is confined within the coil, preventing arc transfer to the tank.

Years of Operation in hundreds of installations have proved the reliability, ease of operation, and simplified maintenance of Allis-Chalmers mercury arc rectifiers. You can get complete information at your nearby A-C office, or write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin.

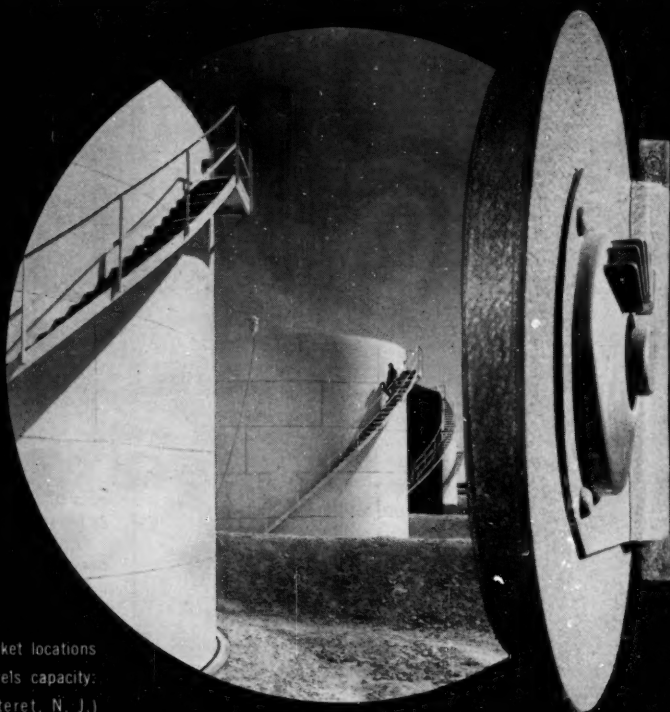


ALLIS-CHALMERS



A-5084

how to keep a
MULTI-MILLION-DOLLAR SECRET



Six terminals at 5 key market locations
with over 12,000,000 barrels capacity:
PORT OF NEW YORK (Carteret, N. J.)
PORT OF NEW ORLEANS (Good Hope, La.)
CHICAGO, ILLINOIS (Bedford Park) • PORT
OF HOUSTON (Galena Park and Pasadena,
Texas) • CORPUS CHRISTI, TEXAS

General American blends and prepares anti-freeze according to secret formula!

Chances are the anti-freeze for your car came from General American. That's because General American is entrusted with the secret formula of one of the nation's largest manufacturers of anti-freeze. The manufacturer takes advantage of strategically-located General American terminals—and uses the services of skilled and trusted personnel. Anti-freeze is blended and prepared on the spot—

stored and distributed per instructions.

Your lease of General American Tank Storage Terminals can include modern barreling and drumming services. Leased facilities at six "key market" General American terminals give you the privacy, safety, service and flexibility of your own terminals — *without capital investment on your part.*



GENERAL AMERICAN TANK STORAGE TERMINALS

a division of GENERAL AMERICAN TRANSPORTATION CORPORATION

135 South LaSalle Street • Chicago 90, Illinois

*Roundup
of facts on
surfactants based
on*

JEFFERSON

**Ethylene
Oxide**



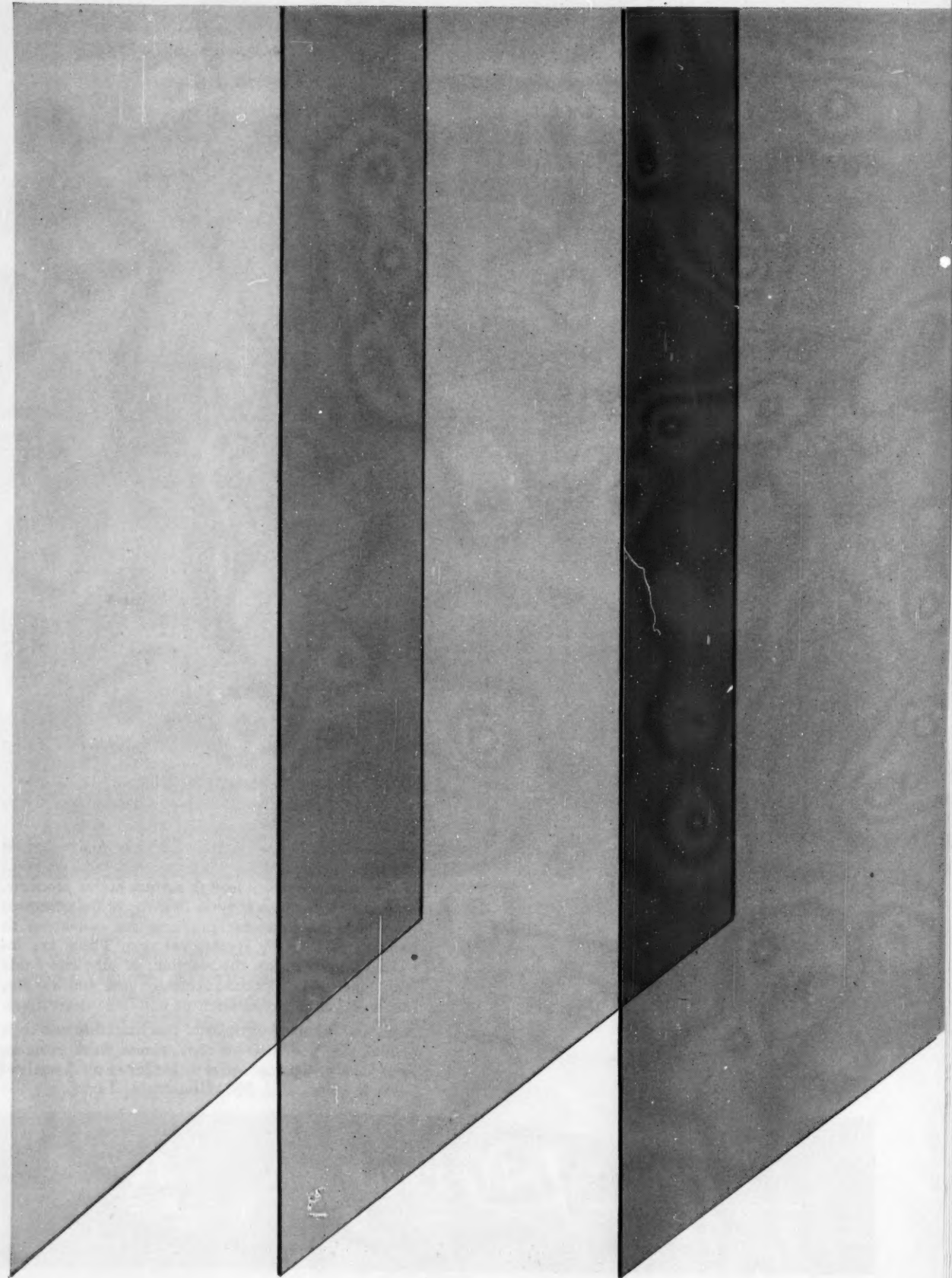
Hydrophobic material such as fatty acids, fatty alcohols, fatty acid amines and alkylated phenols may be reacted with Ethylene Oxide, forming polyoxyethylated derivatives which are employed as surface active agents.

Jefferson's "Literature Search of Surface Active Agents based on Ethylene Oxide" is a comprehensive roundup of the reactions which lead to surface active products, especially the non-ionic type. In many of the processes described, the non-ionic products are converted to ionic derivatives by further reaction. These are included together with the reactions of ethylene oxide with long chain alcohols, acids, amines, amides, etc., involved in the preparation of non-ionic derivatives.

A limited number of copies of this literature search is available. If you desire a copy, please write to us on your company stationery. Jefferson Chemical Company, Inc., Box 303, Houston 1, Texas.

Jefferson
CHEMICAL COMPANY, INC.





CARBON BISULFIDE...UNLIMITED!

Manufacturers of viscose rayon, cellophane, grain fumigants and special solvents can look to Stauffer for Carbon Bisulfide of highest purity.

Nine plants throughout the country assure a steady supply of this basic chemical. Anticipating future needs, Stauffer has one *new* plant under construction and another in process of enlargement.

For Carbon Bisulfide of highest purity in drums and tank cars . . . talk with any Stauffer representative.

STAUFFER CHEMICAL COMPANY

380 Madison Avenue, New York 17, N. Y.
Telephone: OXford 7-0600



Stauffer means service

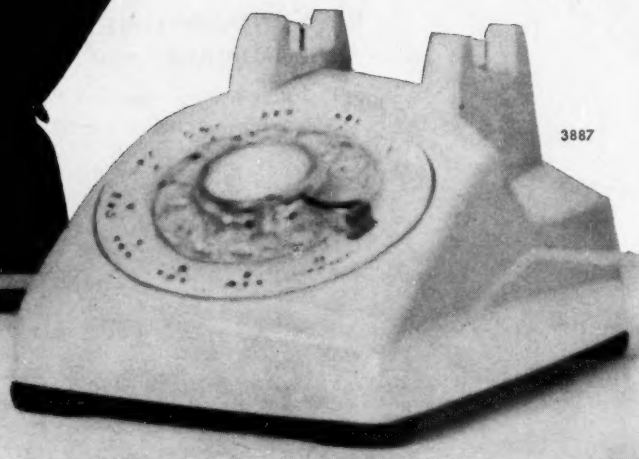
look...

it's

TITANOX®

You'll never get a wrong number when you use TITANOX—that is, in your line of plastic products.

As whitening, brightening and opacifying agents, nothing can surpass TITANOX titanium pigments for adding eye-appeal—to paints, paper, ceramics and rubber, as well as plastics. Titanium Pigment Corporation (subsidiary of National Lead Company), 111 Broadway, New York 6, N. Y.; Atlanta 5; Boston 6; Chicago 3; Cleveland 15; Houston 2; Los Angeles 22; Philadelphia 3; Pittsburgh 12; Portland 14, Ore.; San Francisco 7. In Canada: Canadian Titanium Pigments Limited, Montreal 2; Toronto 1.



For high purity pipeline acetylene
 C_2H_2

✓ check the advantages of



NATIONAL CARBIDE
CALVERT CITY
KENTUCKY

- The initial high purity of carbide acetylene makes purification to your exacting standards simple and inexpensive.
- National Carbide's policy is liberal on load factor.
- Good level construction land at the site.
- Many other basic chemicals are available from neighboring manufacturer-suppliers.
- Natural gas, plentiful water supply and TVA electric power.
- Illinois Central R.R. and navigable Tennessee River. Near geographical center of the U.S. Favorable rates to all major markets.
- Modern housing and school facilities. Industry-labor relations record is excellent.

A complete up-to-date report on the facilities and advantages of Calvert City is now available. Write National Carbide for a copy of "Industrial Resources, Calvert City, Kentucky."
Prepared by the Joint Civic Industrial Committee of Calvert City,
and the Agricultural and Industrial Development Board of Kentucky.

AT THE FRONTIERS OF PROGRESS YOU'LL FIND . . .



National Carbide Company

General Offices: 150 East 42nd Street, New York 17, New York
Plants: Louisville, Ky., Calvert City, Ky., Keokuk, Iowa, Ivanhoe, Va.

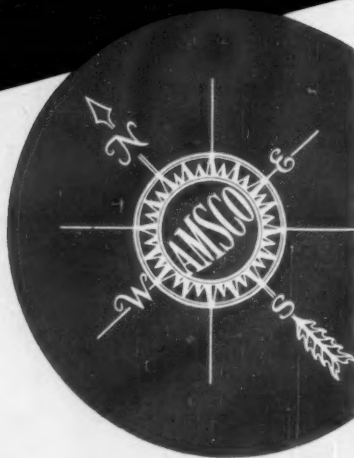
NATIONAL CARBIDE COMPANY is a division of AIR REDUCTION COMPANY, INCORPORATED • Principal products of other divisions include: AIRCO — industrial gases, welding and cutting equipment and acetylenic chemicals • OHIO — medical gases and hospital equipment • PURECO — carbon dioxide, liquid-solid ("DRY-ICE") • COLTON — polyvinyl acetates, alcohols, and other synthetic resins.

SOLVENTS



AMSCO

Most complete line of
petroleum base
solvents available.
What you want,
When you want it,
Where you want it.



AMERICAN MINERAL SPIRITS COMPANY

NEW YORK CHICAGO LOS ANGELES

OPINION

Cutout, Not Manway

TO THE EDITOR: . . . The article on page 78 (*July 14*) quoting a spokesman for American Car & Foundry is not correct in stating the present 16-in. manway has caused difficulties in the past. . . . The 30-in.-diameter cutout in the shell or barrel of tanks below the 16-in.-diameter manway on some old-design tanks has caused some failures that required additional reinforcements.

If more openings are put in the tank shell, more potential failures and leaks might result.

The weakness at the 30-in. cutout has been overcome, however, on ACF modern-built tanks by fluing out the opening in the shell of the tank the same diameter as the dome from a one-piece extra-heavy plate (termed by ACF as Duradome construction).

Fluing out the dome, which is now permitted by the recently revised tank-car specification, eliminates the 30-in.-diameter cutout and considerably increases the safety of the tank should a hasty exit be necessary in case of emergency.

N. E. CARLSON
Director of Engineering
ACF Industries, Inc.
New York

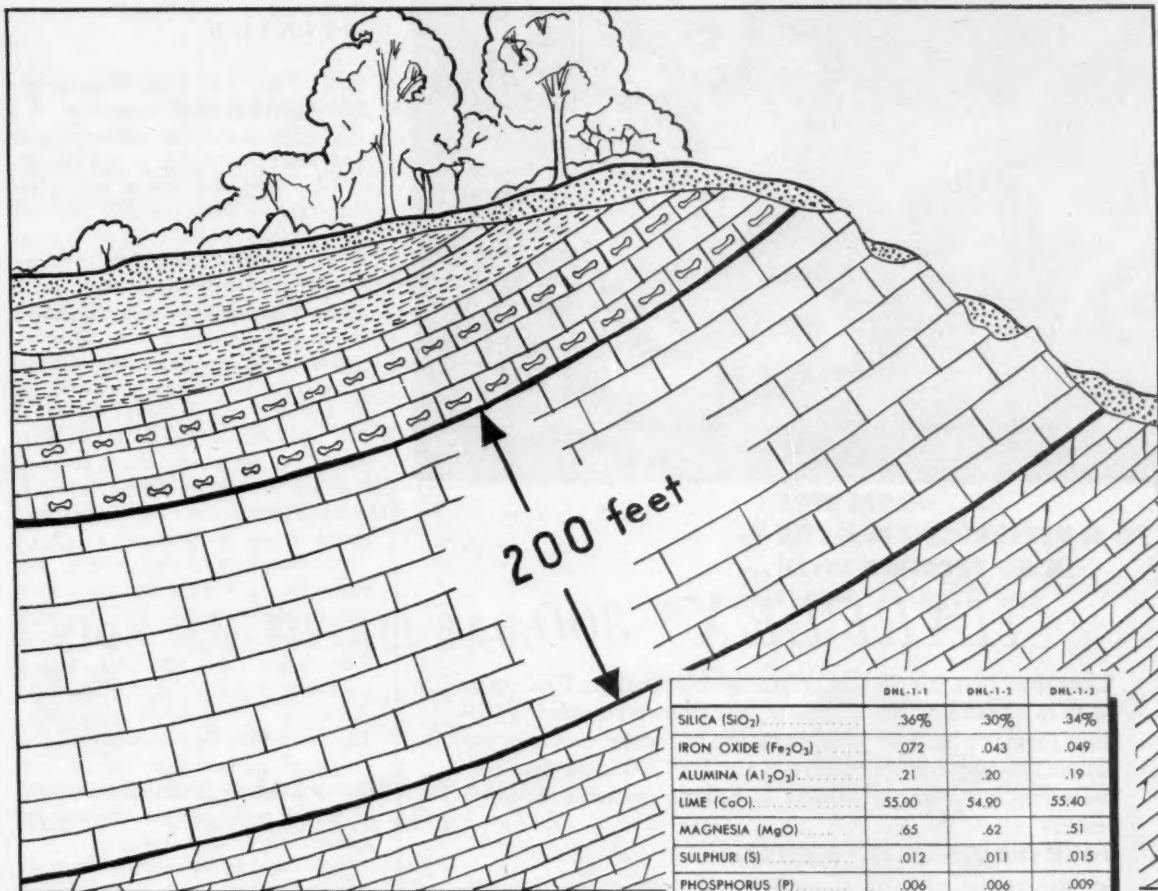
Question of Validity

TO THE EDITOR: The technical articles in *CHEMICAL WEEK* are generally so complete and accurate that I was more than a little surprised to note in the article titled "Fungicide Patent Falls" (*July 7*) the statement ". . . the patent was invalid because it did not include 'process claims' . . ."

I can visualize the consternation that this statement would cause among technical personnel, for I spent many years in the research laboratory and

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to:
H. C. E. Johnson, *Chemical Week*,
330 W. 42nd St., New York 36,
N.Y.



Limestone for Cement and Chemical Lime Manufacturers

Limestone in the Land of Plenty—where deposits are known to be well in excess of 100 million tons—is so pure that the cost of processing it can be held to a minimum.

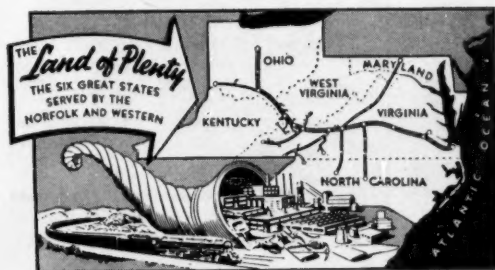
Scientific core drillings and laboratory tests have proven this limestone's great abundance and superior quality. Some of the beds are a startling 200 feet in thickness, and tests show that this limestone is almost 100% pure and is ideal for many uses.

If you're looking for a plant site with plenty of high-grade limestone close at hand, don't overlook the productive territory served by the Norfolk and Western. N&W specialists will be glad to discuss specific requirements with you in confidence and without obligation.

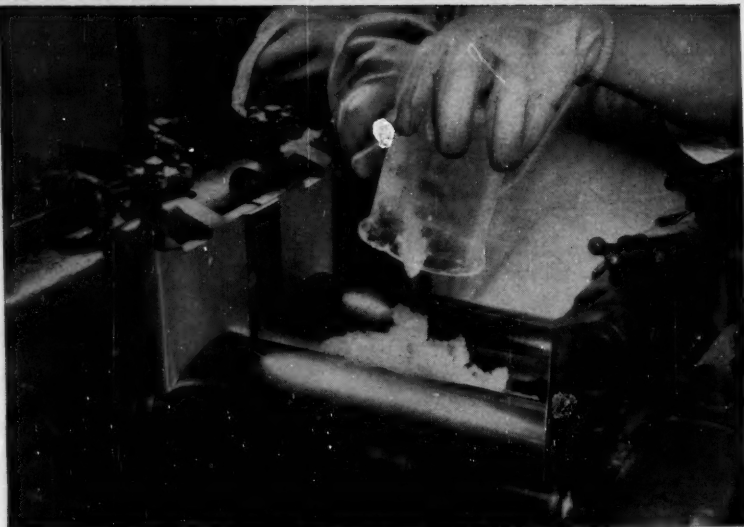
We believe the raw material you've been seeking may be found in the Land of Plenty's limestone.

For Complete Information,
WRITE, WIRE or CALL:

L. E. WARD, JR., Manager
INDUSTRIAL AND AGRICULTURAL DEPT.
Drawer CW-726 (Telephone 4-1431, Ext. 474)
Norfolk and Western Railway
ROANOKE, VIRGINIA



Norfolk and Western RAILWAY



**FROM THIS
TO A PERMANENT PLASTIC
IN 50 SECONDS WITH ...**

HARFLEX® 300

Tests show that this efficient polymeric will plasticize PVC resins in 45 to 50 seconds. No secondary plasticizers are needed to produce plastics which are permanent, non-migratory, and have excellent low-temperature properties. Harflex® 300 is the first easy processing, polymeric plasticizer to become available for vinyl resins.

YOUR INQUIRIES ARE INVITED:

At your request, a free booklet will be sent to you giving complete information about Harflex® 300. Samples of Harchem's other plasticizers (Sebacates, Phthalates, Adipates) are also available. Write to us giving your requirements for experimental or test work.



HARCHEM DIVISION

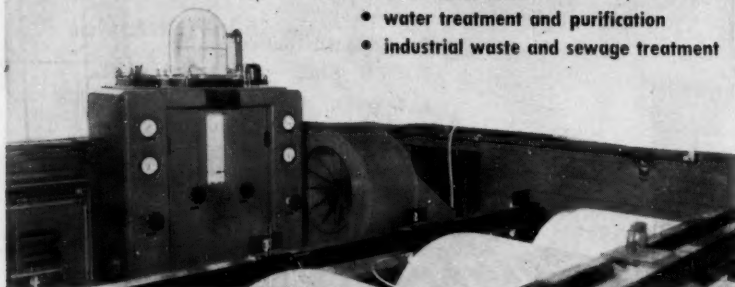
WALLACE & TIERNAN, INC.

25 MAIN STREET, BELLEVILLE 9, NEW JERSEY

IN CANADA: W. C. HARDESTY CO. OF CANADA, LTD., TORONTO

CHLORINATORS and CHEMICAL FEEDERS

- for
- slime elimination
 - water treatment and purification
 - industrial waste and sewage treatment



WALLACE & TIERNAN INCORPORATED

CD-41

25 MAIN STREET, BELLEVILLE 9, NEW JERSEY

OPINION

have noted how most chemists are intrigued by patent litigation.

The fact is that the patent in question was held invalid for just the opposite reason. The patent was a re-issue patent that included the five formulation claims of the original patent as well as eight process claims that were newly added. Judge Moore carefully considered the newly added claims and concluded that the scope of the patent was enlarged by these claims. The law allows broadened re-issue patents only if applied for within two years of the date of the original patent. As the reissue patent in question was applied for more than nine years after the date of the original patent, it was held invalid.

Another ground for holding the patent invalid was the fact that nabam was an old compound that had been made some 40 years ago, and a Du Pont patent, No. 1,972,961, taught generally that dithiocarbamic acid derivatives are useful as fungicides. The court held that discovery of the fungicidal properties of nabam was not an invention, nor was the mixing of nabam or related salts with water a patentable development.

When read in its entirety, the position of Judge Moore is readily understood . . .

WARREN D. MCPHEE
Attorney at Law
Wilmette, Ill.

SEE YOU THERE

National Soybean Processors Assn. and American Soybean Assn., annual meeting, University of Illinois, Urbana, Aug. 13-15.

Yale University, International Symposium on Combustion, New Haven, Conn., Aug. 19-24.

University of Pennsylvania, conference on scientific and technical writing, Philadelphia, Aug. 20-24.

National Bureau of Standards, Boulder Laboratories, conference, Boulder, Colorado, Sept. 5-7.

National Agricultural Chemicals Assn., 23rd annual meeting, The Essex and Sussex, Spring Lake, N. J., Sept. 5-7.

American Institute of Chemical Engineers, William Penn Hotel, Pittsburgh, Sept. 9-12.

International Union of Pure and Applied Chemistry, Congress on analytical chemistry, Lisbon, Portugal, Sept. 9-16.

ADD A TOP CREASE to your sewn-valve Multiwall and you will substantially reduce sifting. Union packaging specialists will show you how this crease controls sifting by improving the closing of the insert.

Field tests have shown that the valve closure on the Multiwall with a top crease is far neater and makes a better appearance than the uncreased bag.

Union offers sewn-valve Multiwalls with top crease at no upcharge . . . another typical example of Union's extra service to its customers.

Ask to see samples of these new bags and a demonstration of what they can contribute to your packaging operation.

UNION MULTIWALL BAGS



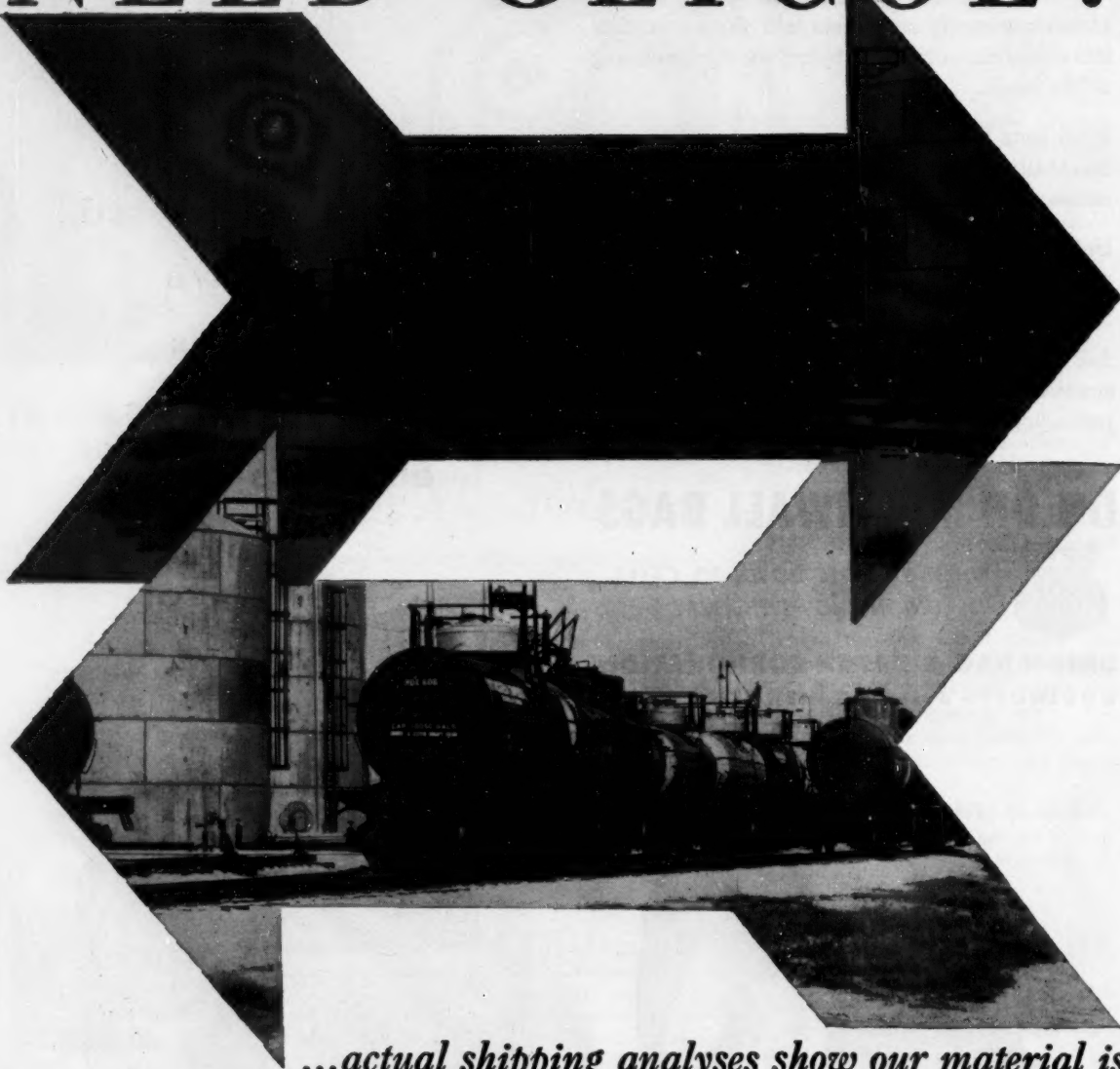
WHEN YOU GET DOWN TO CASES,
UNION SHOWS THE WAY

UNION BAG & PAPER CORPORATION
WOOLWORTH BUILDING, NEW YORK 7, N. Y.

**Union's top creased
sewn-valve
Multiwalls
have helped us
eliminate sifting**



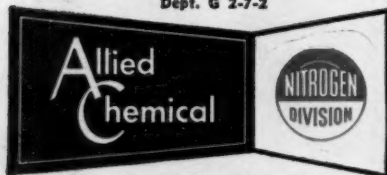
NEED GLYCOL?



...actual shipping analyses show our material is low in iron, chlorides, acidity and water!

At our Orange, Texas plant — one of the world's most modern petrochemicals plants — we employ the most advanced processes to turn out ethylene, diethylene and triethylene glycol of the highest commercial purity. They are available in bulk from the plant in 4, 6, 8 and 10,000-gallon tank cars or barges — and in L.C.L. shipments (drums or tank trucks) from Edgewater, N. J.; New York, N. Y.; Boston; Chicago; Los Angeles; and other key industrial points.

Dept. G 2-7-2



40 Rector Street, New York 6, N. Y.

Write for a typical analysis, price quotation, free sample, or technical service.

A Better America Through Chemical Progress

Ethanolamines • Ethylene Oxide • Ethylene Glycols • Urea • Formaldehyde • U. F. Concentrate—85 • Anhydrous Ammonia • Ammonia Liquor • Ammonium Sulfate • Sodium Nitrate • Methanol • Nitrogen Tetroxide • Nitrogen Solutions • Fertilizers & Feed Supplements

Business

Newsletter

CHEMICAL WEEK

August 11, 1956

Strikes—and their results—made news this week.

Following the signing of contracts this week, and the upping, by \$8.5/ton, of steel prices by the large steel producing firms, production will slowly be making its way back to normal—though it may take two weeks or more for even 90% of capacity production to be restored. The dent in supplies of coal-tar aromatics and by-product ammonium sulfate (*see p. 84*) won't be smoothed out for some time, even though many coke ovens will be operating before the blast furnaces are up to capacity.

The United Steelworkers' dispute with Aluminum Co. of America and with Reynolds Metals may mean some disruption of the aluminum chemicals market. Complications of the aluminum union picture (AFL-CIO's Aluminum Workers and Alcoa have signed a contract; Kaiser Aluminum, whose union contracts expire later, hasn't yet been affected) make it virtually impossible to delineate this effect—except to say that it may become more serious.

But the six-week Westvaco Chlor-Alkali strike is over, and the 915 hourly workers at South Charleston, W. Va., are back on the job. Workers at the plant—which provides a substantial part of the over-all U.S. production of chlorine and caustic soda (*see p. 83*)—will get an immediate 15¢ boost as one provision of a three-year contract. A 7¢ boost will be given in Aug. '57, and 8¢ a year later. Other provisions: 2½ times base pay for work on six holidays each year, liberalized vacation benefits.

On the legal scene—Barium Reduction Corp. will have to defend 13 suits filed by employees of Keystone Motor Express Co. for damages alleged to have been caused by Barium's negligence when a quantity of hydrogen sulfide was released from a cylinder being unloaded at Keystone's terminal in Pittsburgh. Total damages asked: \$325,000.

Meanwhile, settlement of claims resulting from the 1946 Texas City explosion by the U.S. Army continues. So far, some 218 claims have been settled for amounts ranging between \$100 and \$30,450. Total paid out so far: \$3.5 million.

Those explosions in Niagara Falls Monday afternoon did "considerable" damage to Olin Mathieson's sprawling complex of chemical production and research units. Two blasts, which occurred almost simultaneously at about 12:05 p.m., are said to have originated in OM's benzene hexachloride production unit, though the exact cause isn't likely to be known until wreckage of the three buildings that were destroyed can be carefully examined.

Fire, which resulted from the blasts, was fought with chemicals and with foam-producing equipment brought in by the city and by Air Force and Navy installations nearby. Du Pont, Carborundum and others sent nurses to give first aid assistance to injured and dying workers.

The most expensive industrial gas contract for an Arkansas plant has been signed between Dierks Paper Co. and Arkansas Louisiana Gas Co. The 23.5¢/1,000 cu. ft. average price is about 5¢ higher than the general in-

Business Newsletter

(Continued)

dustrial natural gas rate that has been approved by Arkansas Public Service Commission. The 3½-year contract to serve the abuilding \$30-million plant at Pine Bluff, Ark., requires the gas firm to build 3.7 miles of 6 in. transmission line to the plant. But it may find other takers for its gas. Both International Paper and Murphy Corp. also plan pulp and paper mills at Pine Bluff.

And Reynolds is considering another aluminum reduction plant in Arkansas if it can get enough gas at the "right" price for electric power generation. It is considering a plant that would produce 200 million lbs./year of aluminum.

Other expansions in the news:

General Aniline & Film is constructing a synthetic detergent unit at Calvert City, Ky., that will make 25 million lbs./year of ethylene oxide-base materials. The plant, due onstream by Dec. 1, will let GAF serve the mid-South with material now shipped from Linden, N.J.

Victor Chemical will add a fifth electric furnace for production of elemental phosphorus at Mount Pleasant, Tenn.

•
Increased American interest in the fortunes of Montecatini, Italian chemical and mining colossus, has resulted in a new arrangement between that company and J. P. Morgan & Co. The New York bank will issue depository receipts against stock shares held in Italy. All costs of issuing the receipts, their transfer, and the collection and disbursement of dividends will be paid by Montecatini.

Reportedly under consideration for the future: listing of Montecatini shares on the New York Stock Exchange. Some investment sources say that such listings won't be requested until after a 1-for-10 reverse split is effected. This would put the price on company shares in the \$40-\$50 trading range; stockholders would then be given rights to subscribe for additional stock.

•
A leading Congressional expert on scientific research and manpower, Rep. Carl Hinshaw (R., Calif.) died Sunday in Bethesda, Md. Hinshaw, a ranking Republican member of the House-Senate Joint Committee on Atomic Energy and former chairman of its research and development subgroup, had been a prime mover on many atomic matters, and this year introduced a bill to release qualified scientists from the armed services for further academic study. The bill did not get to the full House for a vote.

•
Problems of a one-company town were exemplified last week as ground was broken at Ravenswood, W. Va., for the first of 14 new apartment buildings Kaiser Aluminum & Chemical is building for its employees. Also to be built: 400 brick houses, to be sold to its employees; and an elementary school, to be leased for \$1/year to the county board of education.

MUTUAL CHEMICAL DIVISION
 ALLIED CHEMICAL & DYE CORPORATION
 55 PARK AVENUE • NEW YORK 16, N. Y.

LAST MONTH

S	M	T	W	T	F	S
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

MAY

S	M	T	W	T	F	S
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

JUNE

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	1	2	3	4	5

**for Wood Preservation
 ... Consider Chromates**

The demand for lumber treated with Chromate salt formulations is increasing due to the ability of these preservatives to provide a long, useful life for wooden structures. In addition to making lumber resistant to fire, fungi and termites, these effective chromate

compounds give the wood clean, odorless, paintable surfaces. Mutual does not make these formulations, but is a leading manufacturer of the Chromium Chemicals called for in government and industry specifications for water-borne preservatives.

SODIUM BICHROMATE • POTASSIUM BICHROMATE • SODIUM CHROMATE • CHROMIC ACID

TAKE A
NEW LOOK
AT



PROPERTIES:

Molecular weight	159.83
Atomic weight	79.916
Specific gravity at 20/15°C.	3.120
Pounds a gallon at 20°C.	26.0
Boiling point	58.8°C.
Freezing point	-7.2°C.

Freely soluble in alcohol, ether, carbon tetrachloride, chloroform, concentrated HCl, aqueous solutions of inorganic bromides

SPECIFICATIONS:

Bromine, not less than.....	99.7%
Specific gravity at 20/15°C., not less than.....	3.1
Chlorine, not more than	0.15%
Iodine	None
Non volatile, less than	0.01%
Water Content	0.003% Max.

A NEW BROMINE PLANT* at El Dorado, Arkansas, will provide a large, dependable source of high-quality bromine at lower delivered cost in volume. This added capacity to our present production from plants at Saint Louis and Manistee, Michigan permits active research by you on this basic chemical element to take advantage of bromine's unusual and unique properties and characteristics. Investigate the possibilities of bromine and bromides in your business.

*A joint-venture project of Michigan Chemical Corporation and Murphy Corporation of El Dorado, Arkansas.

WHAT BROMINE OFFERS YOU

HIGHER YIELDS

Bromine compounds give higher processing yields in: Quarternary salt formations; Grignard reactions in the aromatic series; nitrile formations; hydrolysis to carbinols; Ullmann reactions, and Reformatsky reactions.

Bromine compounds have exceptionally high densities—the highest of any organic compounds with few exceptions. This suggests uses in processes involving liquid—liquid separations.

Various inorganic bromides are useful catalysts in reactions involving intramolecular rearrangements.

PROCESSING ADVANTAGES

Bromine is handled as a liquid—does not require pressurized equipment.

Oxidation potential of bromine is lower than that of elemental chlorine or fluorine. This minimizes decomposition of hydrocarbons in halogenation reactions.

Melting points of bromides are higher than those of chlorides or fluorides. This usually makes isolation easier—an important advantage to the research chemist.

NEW PRODUCT OPPORTUNITIES

Bromine imparts greater fire resistance to organic compounds than low molecular weight halogens. This property has proved useful in fire extinguisher fluids and in fire proofing cloth and has application in plastics and coatings.

New pharmaceuticals are possible with bromine compounds as intermediates.

Bromine and compounds, which readily release bromine, are active germicides, bactericides and algicides.

Michigan Chemical will be glad to aid you with your present bromide needs, or to help you in basic bromine research. Write or phone us.



C-56-9

*Reg. U.S. Pat. Off.

**T.M.

MICHIGAN CHEMICAL CORPORATION

515 Bankson Street, Saint Louis, Michigan

EASTERN SALES OFFICE: 230 Park Avenue, New York 17, New York

	Sales 1st 6 months 1956 (million dollars)	Percent Change from 1955	Net Profit 1st 6 months 1956 (million dollars)	Percent Change from 1955	Percent net profit to sales, 1st 6 months '56	Percent net profit to sales, 1st 6 months '55
Allied Chemical & Dye	341.7	7.4	25.5	3.8	7.5	8.3
Amer. Agric. Chemical ¹						
American Cyanamid	252.9	12.2	33.7	81.7	13.2	8.3
American Potash	20.0	44.3	2.4	29.7	12.0	13.4
Atlas Powder	33.0	6.8	2.2	32.4	6.8	5.5
Commercial Solvents	27.5	10.1	1.6	24.9	5.7	5.0
Diamond Alkali	61.6	14.8	5.6	37.2	9.0	7.5
Dow Chemical ¹						
Du Pont	928.1	-1.5	187.8	0.8	20.2	19.8
Gen. Aniline & Film ¹						
Hercules Powder	120.4	7.0	9.8	4.7	8.1	8.3
Heyden	12.2	-2.3	0.8	1.3	6.7	6.5
Hooker	49.7	6.7	5.7	12.2	11.6	11.0
Interchemical	55.3	12.8	2.3	6.7	4.2	4.4
Int. Min. & Chem. ¹						
International Salt	14.1	15.4	2.6	26.9	18.3	16.7
Merck	87.1	12.9	10.3	33.0	11.8	10.0
Monsanto	280.3	5.3	22.0	-10.5	7.8	9.2
Pennsylvania Salt	37.1	9.5	2.1	8.7	5.8	5.8
Pfizer	87.2	9.8	9.6	17.5	11.0	10.3
Rohm & Haas	82.4	1.1	17.7	-10.8	9.4	11.0
Smith-Douglass	25.5	-2.9	1.3	-25.7	4.9	6.4
Spencer	28.1	28.2	4.3	21.6	15.4	16.2
Stauffer	77.4	10.9	6.6	8.8	8.6	8.7
Texas Gulf Sulphur	44.6	-8.4	14.8	-12.9	3.3	3.5
Union Carbide	617.9	11.5	70.1	10.2	11.3	11.5
Victor Chemical	24.9	6.4	1.8	-1.4	7.4	8.0

Semichemicals

Air Reduction	82.9	16.4	7.9	52.9	9.5	7.3
Eastman Kodak	325.1	2.9	38.8	6.6	11.9	11.5
Food Machinery	152.8	11.0	9.1	13.5	5.9	5.8
Koppers	148.7	48.6	6.9	42.3	4.7	4.9
National Distillers	264.9	12.9	10.1	48.4	3.8	2.9
Olin Mathieson	300.1	10.7	21.6	8.3	7.2	7.4
Pitts. Coke & Chem.	34.1	21.9	2.0	19.0	5.8	5.9

¹Figures not yet released.

Earnings—Encouraging, Not Spectacular

Profits and sales in the chemical industry continued an encouraging, though not spectacular, climb during the first six months of '56.

The steep, accelerated rise so prominent in last year's earnings figures has leveled off somewhat, but there has been no sales decline on an in-

dustry-wide basis. On the contrary, most companies show steadily increasing volumes—many setting new highs. Of the 29 companies reporting, only

four showed sales lagging behind the first six months of '55. And of these, two showed a net profit increase. Five companies' profits dipped below last year's, but only two had corresponding sales declines.

Most agricultural chemical firms have not yet compiled earnings figures. This branch of the industry had a particularly rough ride during the first quarter (*CW*, May 5, p. 17), but since ag chemicals are so seasonal, the profits from spring fertilizer sales are expected to at least partially offset the first quarter slump. The word in the industry: a good measure of confidence has returned as a result of encouraging farm legislation.

Level, or Up? The leveling off predicted by some economists for the third quarter doesn't seem to be occurring in chemicals; and certainly there's been no widespread downturn.

Several companies, asked to comment on how sales are moving, are genuinely optimistic, though they indicate that it is much too early to get an accurate picture of what the full quarter will be like.

Marginal Slump? If a third-quarter slump is in the offing, you'd expect to find indication of it in the ratios of net profit to sales. Even if dollar profit increases, an industry-wide drop in profit percentage could be regarded as a harbinger of less-happy times ahead. Most companies either topped last year's ratio or showed no change, though 11 of those reporting showed squeezed profit ratios compared with last year. But lower profit ratios don't necessarily mean that actual net earnings will be lower. As long as sales continue to grow, so should profits—but at a slower rate.

Expansions, acquisitions and overall capital spending have climbed steadily since early in '55. When these new units go onstream and new equipment springs up along production lines, present records are sure to be surpassed. Today's unprecedented spending program should begin to show investment returns by next year; thus '57 sales may be well above those in '56.

Earnings figures now in indicate the tremendous gains of '55 will probably not be matched this year—but chemical earnings are still growing fast, well ahead of most other industries and proceeding at a more than satisfactory pace.

Drive for New Scientists

Manufacturing Chemists' Assn. this week detailed the five-year, \$1-million education program it will launch this fall. MCA's goal: to "alleviate" the growing shortage of scientists by helping students in grade and high school to see the advantages of a career in science.

Plans for the program were first outlined to MCA members at the association's annual meeting at White Sulphur Springs (*CW*, June 16, p. 20), as was an association survey, which predicted a chemical industry shortage of 93,000 scientists and an over-all U.S. technical personnel shortage of 475,000 by 1965. (Item: it's also possible that Russia may surpass the U.S. in number of scientists and engineers; the National Science Foundation last week estimated that the U.S.S.R. graduated 126,000 such students in '55—twice as many as did the United States.)

MCA's program was approved by its board of directors, after getting assent, through a referendum, of an overwhelming majority of its members. Since the plan won't be limited to promoting careers in chemistry and chemical engineering, it's obvious that the approval represents both an enlightened self-interest and a fear that unless efforts are taken to reduce this shortage, the U.S.'s economic and technological growth will slow down.

Three Objectives: The program has three objectives: (1) to inspire qualified students to become scientists; (2) to improve science teaching at all levels—from elementary through college grades—by development of "curriculum enrichment" aids; (3) to increase the number, effectiveness and prestige of science teachers.

MCA will take these specific steps:

- During the 1956-57 school year, junior high schools will get most attention. MCA, with pilot tests of 50 such school systems already completed, will offer printed materials for both students and teachers, plus charts and other visual aids to science classes in 3,600 junior high schools.

- At the same time, MCA will run a pilot program in senior high schools using a demonstration manual, teaching chart and film strip. After pilot tests, it will offer a program to 11,700 high schools teaching chem-

istry. This will cover an estimated 400,000 students.

- MCA will make its first contact with elementary school students in 1957-58 through distribution of a series of sixth-grade visual materials to principals, teachers and students. The material will stress the role of science in everyday life.

- An existing MCA careers booklet, "Frontiersman of the Future," beamed at students and vocational guidance counselors, will be used at all levels of the program.

- Outstanding college instructors will receive MCA awards to "promote recognition of the science teacher."

- A community-level, industry-education cooperation plan will operate simultaneously with the school program. First step: production of a manual of suggested plant-community activity by chemical firms.

MCA's expectations for the program: "A fervent hope" that it—plus other similar efforts—will succeed in keeping the shortage of scientists within manageable limits.

Stopgap Subsidy

Domestic minerals processors are eyeing with satisfaction Congress' preadjournment approval of \$21 million for use in implementing the Minerals Purchase Act.

Theoretically, at least, these funds should be enough to carry out a four-to six-month purchase subsidy program for acid-grade fluorspar, tungsten, asbestos, columbium-tantalum.

General Services Administration is authorized to spend \$91 million, through the end of 1958, to buy 250,000 tons of acid-grade fluorspar at \$53/ton, paid at mill, plus large amounts of the three other minerals in the same period.

The Administration asked Congress to appropriate the full \$91 million this year. The Senate approved a \$35-million appropriation—enough for the first year; but House conferees eliminated the \$35 million, leaving no money for the program this year. The \$21 million was agreed to in Senate-House conference.

It's fairly certain there will be some effort early next session to get more money for the fiscal year 1957.



CAPITOL HILL: Experts are already drafting bills for next year's Congress.

Legislation: What's in Store for Chemicals

That baseball aphorism, "wait 'til next year," can be applied almost as well on Capitol Hill as it has been applied to the Brooklyn Dodgers. For, in the last few hectic weeks of the now completed Congressional session, many bills affecting the chemical industry were passed over.

But many of the dropped bills are likely to be reintroduced in January. Though legislators themselves have their minds on politics, their legislative assistants, as well as committee staff members, and legislative experts of the various government agencies are already at work drafting bills for the upcoming 85th Congress.

Taxes First: To chemical companies, as to business in general, one of the most important questions concerns corporation taxes. The current 52% tax rate, which markedly affects a company's future plans and past profits (see page 21), is slated to drop to 47% next April 1. Right now, it doesn't seem likely that Congress will let this drop occur. Odds are that the 52% rate will be continued in effect.

There may be some personal income tax relief, however. Unless there is a serious turn for the worse in the cold war, you can expect a strong move to cut individual taxes.

Merger Moves: The bill that would have required large companies to give the government a 90-day notice before consummating a merger was a Senate

casualty—as the result of a merger. That bill and the one that would have eliminated the "good faith" defense in price discrimination cases had been combined into a single bill, which, as such, was defeated. Each will surely be taken up separately by the new Congress.

The several atomic bills will be argued again. These would have provided for government insurance on reactor disasters, for government construction of new reactors, and for exempting from holding-company laws those corporations that band together to study atomic power problems.

Pesticides, Additives: Expect another battle over chemical food additive legislation in approximately the same arena. Last week's renomination of Rep. J. Percy Priest (D., Tenn.) will keep him as Democratic power on additives. And Rep. Joseph O'Hara (R., Minn.) is just as likely to remain the Republican kingpin. Bills embodying both the Food & Drug Administration and the chemical-food industry views will be reintroduced, with the same wide gulf between them that has previously prevented passage. FDA probably won't yield to the industry position that safety of an additive should ultimately be decided by the courts; there is no indication yet that a compromise effort will be made before January.

On pesticides, look for action next

year on bills that require the Interior Dept. to study effects of insecticides, herbicides and fungicides on fish and wildlife.

Patents and Property: Because of industry objections to proposed boosts in patent fees, the House's powerful Rules Committee has bottled up a fee-increase bill. There's a chance that with two full sessions to work with, a fee bill could be pushed past the rules group.

There's a question right now on whether a new effort will be made next year to give Congress a veto on the closing down of such commercial-type operations as the Navy's paint-making shops at Norfolk, Va., and Mare Island, Calif. Currently, the military is only under stricture not to increase its costs by shutting down such plants.

And the Rest: Among other bills that will be coming up: a bill to reoffer for sale the butadiene plant at Louisville, Ky., for use to make any war-related chemical; a measure that would recodify present industrial alcohol tax laws to conform with today's commercial practices; a measure (which passed the House) to create 400 new government scientific posts that would pay \$10,000-\$15,000/year; and one to let individuals lease up to 10,240 acres of public lands per state for phosphate rock mining (such a bill had passed the Senate, but died in the House).

Procedural Problems

The suit by **Interhandel**, Swiss holding concern, to gain control of General Aniline & Film has been dismissed, but complicated procedural maneuvers that have reached a new complexity in a never-easy-to-understand case must still be determined.

Still ahead are two moves, one of which awaits return of Federal District Judge Bolitha Laws from his vacation:

- A motion, submitted by Interhandel attorney John Wilson, which, if signed by Laws, would vacate the dismissal.

- In addition, there's a motion filed by Wilson with the circuit court of appeals for the District of Columbia for additional time in which to produce more records, for lack of which the lawsuit was dismissed. Wilson is asking that his plea be heard by all nine appeals court judges.

Last Tuesday, three of these judges denied an extension of time even until the nine judges could convene. Too, a decision to hear such an appeal *en banc* is unlikely in this case. Said one court observer: "They usually grant such a request only when a new legal theory is being tried out in a murder case."

Judge Laws' dismissal this Monday was "with prejudice," so that, according to federal court rules, it cannot be filed again.

Important Move: The next important move will come when Laws returns from his summer holiday.

First step in a likely timetable came with the dismissal. He may now (2) deny the motion to vacate, the appeals court will (3) reject an *en banc* rehearing of Wilson's plea for time extension, and (4) deny an appeal from Laws' denial of the motion to vacate. Wilson will then (5) probably try to get the case reinstated by filing with the Supreme Court a writ of certiorari seeking review of the denial of his motion to vacate.

Tape Charges Stick

Minnesota Mining & Manufacturing's "trade secrets" suit, one of two being litigated against Technical Tape, has won significant support from the Westchester County supreme court. The court has confirmed as true a referee's report on the case.

The referee's report is only one

among many moves made in the 2½-year-old case in which 3M is seeking \$1 million damages for alleged piracy of its pressure-sensitive tape secrets by former employee Frederic Beyer, Technical Tape, and others.

But the report is important to 3M since, as the court held, "the oral testimony . . . constitutes a prima facie case of a conspiracy." Justice Arthur Brennan added that the evidence supporting cross-motions by Technical Tape seeking rejection of the report was without merit.

Another 3M move, however, was rejected. This was the firm's request for an injunction, pending outcome of the trial, to stop Technical from using any of Beyer's acquired information or making any more tape utilizing Beyer's allegedly pirated know-how.

In rejecting the motion, Justice Brennan pointed out that, although the court had confirmed the referee's findings that 3M's evidence showed a prima facie case of conspiracy, the report "is subject to being rebutted or overcome by" evidence that Technical Tape may introduce.

Thus far, Brennan said, 3M hasn't made a clear showing of all the elements required to unquestionably establish its case; it must go on and demonstrate that Technical Tape's product is a result of using 3M secrets. But, said the judge, "there can be no doubt that a trial of the issues should be had at an early date."

Fatal to Fish

Canada's Minister of Fisheries, James Sinclair, has just instructed the Canadian Justice Dept. to proceed with whatever legal action seems advisable against those responsible for the airborne chemical spraying of a New Brunswick fish hatchery—allegedly resulting in the death of over 800,000 salmon and trout.

Sinclair has submitted evidence that is said to implicate Forest Protection Ltd. (Frederickton, N.B.) whose commercial planes reportedly crossed over to the hatchery area while spraying DDT on forests near the Miramichi River. Sinclair declared that oil slicks appeared on the hatchery's pond and buildings, adding that 800,000 fingerlings—over one third of its entire breeding stock—were destroyed within the week.

While a press report attributed the destruction to rain and flood condi-

tions taking place shortly after the spraying, Sinclair points out that "unfortunately, many of our salmon and trout died before the rainfall."

"There does not seem to be much question at all that, whether through accident or by negligence, the actual hatchery area was sprayed by DDT, and over 800,000 salmon and trout died," he added.

Scientists at the fishery emphasize that they are well aware of the need for spruce budworm spraying in the neighboring forests, but earlier this year they worked out a program with Forest Protection Ltd. whereby the New Brunswick hatchery area was definitely out of bounds for aircraft spraying insecticide. Sinclair reports that this is the third such occurrence.

EXPANSION

Glass Fibers: Owens-Corning Fiberglass will expand its Anderson, S.C., fabricating and textile processing plant by 50%. Expected completion date: 1957.

Synthetic Rubber: Firestone Tire & Rubber Co. is expanding its synthetic rubber capacity at Lake Charles, La., 27%. The move will up yearly capacity to 190,000 long tons, including oil extension facilities. Completion date: Dec. '56.

Pulp and Paper: Construction of Bowaters Southern Paper Corp.'s \$35-million sulfate pulp mill in South Carolina will start late this summer. Completion date is 1959, when the mill will be able to produce 400 tons/day.

Aluminum: Reynolds Metals Co. has reportedly completed plans to construct an aluminum reduction plant at Massena, N.Y., on the St. Lawrence Seaway. The company is expected to make formal announcement soon of purchase of 2,000 acres of land for the plant. The New York State Power Authority has stated that it has been negotiating with Reynolds for a block of 170,000 kilowatts of power from the seaway project.

Tungsten/Molybdenum: The Union of Texas Oil Co. has purchased the south side of Black Rock Mountain in Meno County, California, for its tungsten and molybdenum potential.

Washington Angles »

» **Drug manufacturers won** an important concession from Food & Drug Administration in the agency's revised rules for handling new-drug applications. The law says FDA must take final action within 180 days after an application to market a new drug is filed, but FDA has been able to put off action indefinitely in some cases by claiming that an application was "incomplete" and thus not officially "on file."

The new rules bar such delays by allowing applicants to require FDA to consider applications on file as of the date they reach FDA.

» **Congress failed to halt the "open season"** on FDA inspectors. FDA's now-perennial bill to make a federal crime of assaulting or killing its field personnel got no action. FDA was left off the long list of federal agencies with police functions, to which Congress gave such protection a few years ago.

FDA inspectors, however, are covered by the states' felony laws, just like other citizens.

» **Termination of Salk vaccine allocation** by the federal government last week leaves the path

clear for U.S. producers to expand exports. Under the government program, exports have been a mere trickle. Now, officials expect producers to rush into foreign markets before other countries gear up for producing the vaccine. This would keep U.S. output at capacity level. There's little production outside the U.S., Denmark and Canada—and Canadian output is lagging behind that country's demand.

Efforts, too, will be pressed to promote sales in parts of the U.S. where vaccinations have lagged. A recent example: California's daily rate of Salk inoculations jumped from 25 to 1,000 after an intensive publicity campaign in the state by the National Foundation for Infantile Paralysis.

» **The U.S. has jumped into the lead** among the world's uranium producers, according to the first public disclosure of mining tonnage figures by Atomic Energy Commission. Current yearly output from U.S. mines: about 3 million tons. AEC expects annual production to hit 5-6 million tons in a few years, with known or inferred reserves topping 60 million tons.

Current construction plans here and in other free-world countries will boost their total uranium output (on a U_3O_8 basis) to 30,000 tons/year and provide a readily expandable base for further increases if needed.

The company paid \$1,196,000 for the land, will soon begin development of the deposits. This is the company's first nonpetroleum venture.

• **Sulfuric Acid:** Several Canadian chemical companies are reportedly probing the possibility of building an additional sulfuric acid plant at Blind River, Ont., to supply uranium concentrate producers in the area.

• **Pigments:** Du Pont will increase its titanium dioxide production 20% and will spend \$2.2 million on improvements at its Curtis Bay, Md., pigment plant.

• **Sulfuric Acid:** Garfield Chemical & Mfg. Corp. is building its fifth contact-process sulfuric acid plant at Garfield, Utah, to increase production to 1,100 tons/day.

• **Explosives:** Canadian Industries Ltd. has purchased 3,400 acres near Seven Islands, Que., as a site for a new explosives plant. First unit is scheduled to go onstream early in 1957.

• **Oxychemicals:** Hercules Powder Co. will expand its oxychemicals plant at Gibbstown, N.J. Included in the plans is a 100% increase, to 6 million lbs./year in *p*-cresol capacity and a similar doubling of di-*tert*-butyl-*p*-cresol capacity.

COMPANIES

• **Hooker Electrochemical** stock, formerly held in the estate of Blanche Ferry Hooker, late widow of the founder, will be offered for public sale within the next two weeks.

• **Union Bag-Camp Paper Corp.** has purchased most of the assets of American Creosoting Co. (Louisville), a 23-plant wood-preserving company.

• **Owens-Illinois Glass Co.** and National Container Corp. are discussing plans for a merger. Stockholders would vote on the plans at meetings in September.

• **The Mead Corp.** (Dayton, O.) pulp and paper manufacturer, has bought 1,000 acres on the Savannah River,

near Calhoun Falls, S. C. Plans for construction on the site have not been announced.

• **Ferro Corp.** has exercised its five-year option for purchase of common stock of Horizons Titanium Corp. Ferro now owns 258,000 shares of Horizons—19% of the total outstanding stock.

• **Inland Cement Co.** will put \$3.5 million of 4½%, 20-year convertible debentures on the public market. Another \$2.5 million has already been placed privately. Proceeds of the sale will be used to double capacity of the company's plant at Edmonton, Alta. Conversion of the debentures into preferred stock would be on the basis of 28 shares for each \$500 worth of debentures.

• **New Jersey Zinc Co.** has contracted with Atomic Energy Commission to operate a uranium processing mill being constructed by Texas Zinc Minerals Corp. at Mexican Hat, Utah. The plant is scheduled to go into operation in Sept. '57.

Parlon® Stays On

Protects Municipal Swimming Pools

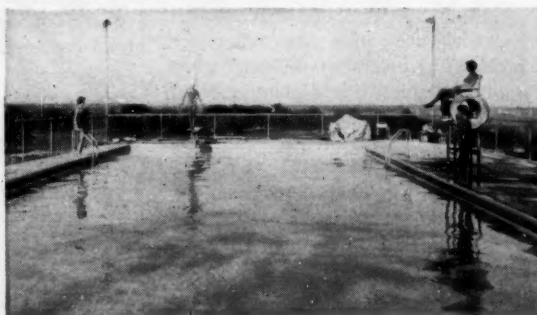


PARLON ON CONCRETE—Since the City of Omaha opened this municipal pool in 1950 it has been kept looking its Sunday Best all season long by RAMUC, a Parlon-based protective coating manufactured by Inertol Co., Inc., Newark, N. J. Omaha's general foreman of maintenance credits this finish with keeping this concrete pool attractive while holding down maintenance and operating costs.

Whether the pool is steel or concrete, municipal maintenance departments heads throughout the nation have found that they can depend on a Parlon-based finish for longer-lasting beauty at lower long-term cost.

Already familiar with the unique chemical and corrosive resistance qualities of Parlon-based coatings for many other municipal uses, these men have found that special Parlon formulations provide the colorful finish they want for pools combined with under-water wearing properties that mean less maintenance cost.

Wherever protective coatings must meet a challenge, whether it be interior or exterior, masonry, wood or metal, look to Parlon for the ideal all-purpose maintenance paint. Your local paint supplier can provide additional information, or write direct to Hercules.



PARLON ON STEEL—This steel pool, too, is painted with RAMUC. Its tile-like finish has withstood the attack of water and water-treatment chemicals without peeling or powdering.

Cellulose Products Department
HERCULES POWDER COMPANY
INCORPORATED
992 Market Street, Wilmington 99, Del.



PARLON CHLORINATED RUBBER PAINTS ARE AVAILABLE FROM 400 MANUFACTURERS UNDER THEIR OWN BRAND NAMES

CR56-5

ADMINISTRATION

EIGHT STRINGS TO M&T'S BOW

(Principal activities of Metal & Thermit Corp., as of 1956)

DE-TINNING

- Plants at Carteret, N.J., East Chicago, Ind., and South San Francisco, Calif.
- 65% interest in Tin & Chemical Corp. (Baltimore).

PLATING AND ELECTROPLATING

- Plants at East Chicago and Carteret.
- Materials and processes for plating with chromium, zinc, nickel, tin, tin alloy and copper.
- Majority interest (50% common stock, 58.89% preferred) in Chromium Corp. of America, which does industrial plating at Waterbury, Conn.; Cleveland (2 plants); and Chicago.

METALS

- Plant at Carteret for manufacture of metals and alloys such as high-purity chromium, ferro-titanium and nickel titanium.

MINERAL EXTRACTION

- Ore processing plant now under construction in Hanover County, Virginia, where M&T plans to mine "substantial" deposits of rutile on company's 800-acre tract.
- Important interest (42% common stock, 50% preferred) in International Titanium Corp., whose wholly owned subsidiary—Metal Recoveries Proprietary Ltd.—mines rutile and zircon in Australia.

INDUSTRIAL CHEMICALS

- Plants at Carteret and Rahway, N.J.; and East Chicago, Ind.
- Products include inorganic and organic tin chemicals, tin soaps, and antimony and zirconium chemicals.

WELDING PRODUCTS

- Materials and equipment for thermit welding.
- Electrodes for arc welding.
- Wholly owned subsidiary—M&T Welding Products Corp. (Oakland, Calif.)—makes equipment and accessories for arc welding.

COATINGS

- Production of special-purpose organic coatings, based on vinyl and other synthetic resins, at plant in Carteret.

RESEARCH

- Main laboratory (near new general office building at Rahway) now being expanded to provide additional facilities, including pilot plants and semicommercial works for industrial chemicals.
- Detroit laboratory handles much of the developmental work on plating materials and processes.
- Wholly owned subsidiary—M&T Laboratories, Inc. (Carteret)—conducts specialized research.

Cans, Chemicals Pave Way to Wall Street

Still relatively unknown to the financial community at large—even after 45 consecutive years of dividend payments—is Metal & Thermit Corp. (New York), whose common stock* is expected to be listed next week on the American Stock Exchange.

*860,000 authorized shares, \$5 par, of which 791,800 are issued and the other 68,200 are reserved for sale to officers and employees.

But the company has long been an important and unusual figure in several metals industries, and now is charting an increasingly ambitious course in chemicals.

With accelerated diversification in recent years, annual sales have mounted from \$14.9 million in 1944 (peak during World War II) to \$35.4

million last year. Based on first-half results, '56 sales are projected to \$41 million. This, coupled with the enviable dividend record—a total of nearly \$25 million paid out since 1911—makes it highly likely that M&T common will be in demand when public trading gets under way. Details of operations for first half of '56: sales up 22.5%



IN NEW QUARTERS: At recent dedication, M&T officers and guests*.

to \$20.6 million; net income down by \$185,793—because of heavier expenses related to M&T's expansion program—to \$937,733.

Can Makers' Ally: Metal & Thermit was organized in New Jersey in 1908—about the time tin cans were becoming popular—as Goldschmidt Detinning Co. to reclaim tin from can manufacturers' scrap metal. The process used was covered by patents acquired from Germany's Th. Goldschmidt. Formerly, most of the tin was sold back to the can makers; now, a good share of it goes into M&T's growing line of tin chemicals. The residual steel is sold to steel companies as prime-grade heavy melting scrap.

First branching-out came in 1916, when the firm bought out Goldschmidt Thermit Co., a supplier of metals for thermit welding.

A few years later, M&T set up United Chromium, Inc. to license what has been termed the first commercially feasible process for chromium plating. When patents on that process expired, UC turned to sale of materials for various kinds of metal plating. This end of the business is still growing. UC was merged into the parent organization last fall, enabling management to realign staff and facilities to "increase efficiency in operations," yield "direct cost savings."

*Inspecting newly opened general office building near Rahway, N.J., left to right: Donald Luce, president, Public Service Electric & Gas; William McLean, president, chemical division, Merck & Co.; M&T President Martin; New Jersey Gov. Robert Meyner; and M&T Research Director C. K. Banks.

Titanium Comeback: New deposits of titanium ores—similar to those M&T had been mining in the same locality for 40 years—are being opened in Hanover County, Virginia; and the company expects to have an ore-dressing and separation plant—capacity 10,000 tons of mineral per year—in full operation by 1957.

The company also has a major foreign source of titanium ore in International Titanium Corp., which M&T helped put together during World War II (to obtain Australian rutile for defense production). The Australian ore's zircon content—formerly little more than waste—is now valuable in its own right as an opacifier for ceramics and ingredient of special porcelains and enamels.

Manufacture of certain metals and alloys—by a process closely allied to that of thermit welding—began just before World War I; and the company's line of organic coatings stems from its chromium plating business, with UC developing its own formulations for stop-off lacquers to prevent plating on surfaces where the plating is not wanted.

M&T is stepping up its research on both of these lines, hopes to expand this part of its business—particularly that of special metals—over the next few years.

Chemical Entrance: Entrance into chemicals came stepwise, starting about 40 years ago with the sale of tin tetrachloride for use in weighting silk

and tin oxide for use as an opacifier. This kindled an interest in markets for other compounds of tin, antimony and zirconium. Early development: tin tetrachloride as a stabilizer for perfumes in soaps.

Progress in this field has accelerated since M&T launched a chemical research and development program in 1940. Result: an increasing number of new organic and inorganic compounds of tin and antimony, and a brood of new applications. Among them: tetraphenyltin as a stabilizer for synthetic transformer oils, dibutyltin compounds as vinyl resin stabilizers and in veterinary medicinals, trialkyltin compounds as fungicides and bacteriacides, and stannous fluoride as a toothpaste ingredient.

Youth Movement in Management: Management of M&T—headed up to last year by the company's cofounders, engineer Franz Hirschland, attorney Hubert Rogers and ex-can-manufacturer Frank O'Brien (all now retired)—is now captained by H. E. (for Harold Edward) Martin, New York-born engineer who'll be 56 this November.

Martin came to M&T in 1954 after 25 years with equipment-making Babcock & Wilcox Co. (sales engineer and district manager). (His first job in industry after U.S. Army Tank Corps service during World War I was as a research chemical engineer for General Chemical Co., now a division of Allied Chemical & Dye.) Approachable and receptive to new ideas, Martin is committed to a program of growth, diversification, and a relatively youthful management. Average age of top management group: 47. Largest single shareholder: American Can Co., with about 20% of M&T stock and three representatives on M&T's 12-man board of directors.

Under private trading, M&T shareholders have increased by only 317 in the past five years (to a total of 2,039 as of last Dec. 31); most stockholders have been satisfied to stand pat on M&T securities. This situation probably won't change after the anticipated listing; but registration is expected to help the stockholders by establishing current market value, and to help the company in case Martin's growth and diversification program—financed thus far entirely out of earnings—might someday require a public offering.

M & C
Natural
Minerals
At Work

fourth in a series

For product improvement...
For production efficiency...

Find the answer with
M & C non-metallic minerals



Perhaps you remember when many industrial minerals were considered "bulklers" . . . "cheapeners". Now this has been changed. M&C is proving that its basic non-metallic mineral products hold many answers to manufacturers' critical problems in nearly every major field of production.

New Standard In Raw Materials. M&C bases its integrated operation on a wealth of nature-given materials—Attapulgit, kaolin, bauxite and limestone. It is an operation that can take these minerals, apply creative research and improved processing, and supply superior materials of great uniformity and high purity.

Dividends For Industry. M&C's natural mineral

products usually do a better job and are far less costly than synthetic chemicals. They're *chemically engineered* to upgrade the quality and/or lower the cost of the products they go into.

If Your Business Is In This List, you and M&C have some interesting things to look at and talk about:

Paper Making	Petroleum Refining	Plastics
Paper Converting	Steel Making	Rubber
Printing Inks	Pesticides	Paint
Chemical and Petrochemical Processing		

Free—the full story of how M&C is geared to serve you . . . facts about uses in your field . . . samples and technical help. Use the coupon.



We're in the business of *discovery*. Minerals & Chemicals Research Center at Menlo Park, New Jersey houses the central laboratories of M&C, and includes special sections for all of the major fields of endeavor . . . more reasons to

Think of M & C as:

- Important miners and processors of non-metallic minerals
- Leaders in related research and development
- Marketers-Through-Service of a wide line of mineral products to meet industry's needs.



MINERALS & CHEMICALS CORPORATION OF AMERICA

46 ESSEX TURNPIKE
MENLO PARK, NEW JERSEY

M&C's trade-marked products include:

Adsorbents • Aluminum Silicate Pigments • Attapulgit
Activated Bauxite • Catalysts • Fluxstone • Kaolin • Lime Chemicals
Limestone Aggregates • Speedi-Dri Floor Absorbents

MINERALS & CHEMICALS CORPORATION OF AMERICA
46 Essex Turnpike, Menlo Park, N. J.

Please send me:

- ☐ 16-page bulletin that tells the full M&C story
☐ Samples, information on M&C products for use in

name _____ title _____
company _____
address _____
city _____ zone _____ state _____

SHIP YOUR CHEMICALS IN

ALL RUBBER DRUMS

SAFE AND EASY TO HANDLE!
NO METAL
NO BREAKAGE



for

- MURIATIC ACID
- HYDROFLUORIC ACID
- FERRIC CHLORIDE
- CORROSIVE LIQUIDS

ICC-43A SPEC.
Tare Weight—34 lbs.
13 gallon capacity

★
Made with Natural,
Neoprene, Butyl or other Synthetic
Rubber Linings

★
Threaded or Stopper type closures



THE GENERAL TIRE & RUBBER COMPANY

MECHANICAL GOODS DIVISION
WABASH, INDIANA

Distributed by THE C. P. HALL CO.
5147 W. 67th ST. • CHICAGO 38, ILL.
AKRON, O. • CHICAGO, ILL.
NEWARK, N. J. • LOS ANGELES, CAL.



GERMAN AIR POLLUTION: Stunted cows, sick crops, and civil suits.

Wanted: Cleanup Incentive

U.S. industry, civic groups and state and local governments waging war against air pollution can take solace from the knowledge that there is one area in the world with an even bigger national air pollution problem—the German Federal Republic, with its estimated dust fall-out of 1 million tons/year (106 tons/sq. mile); 60% of this in the Ruhr region alone.

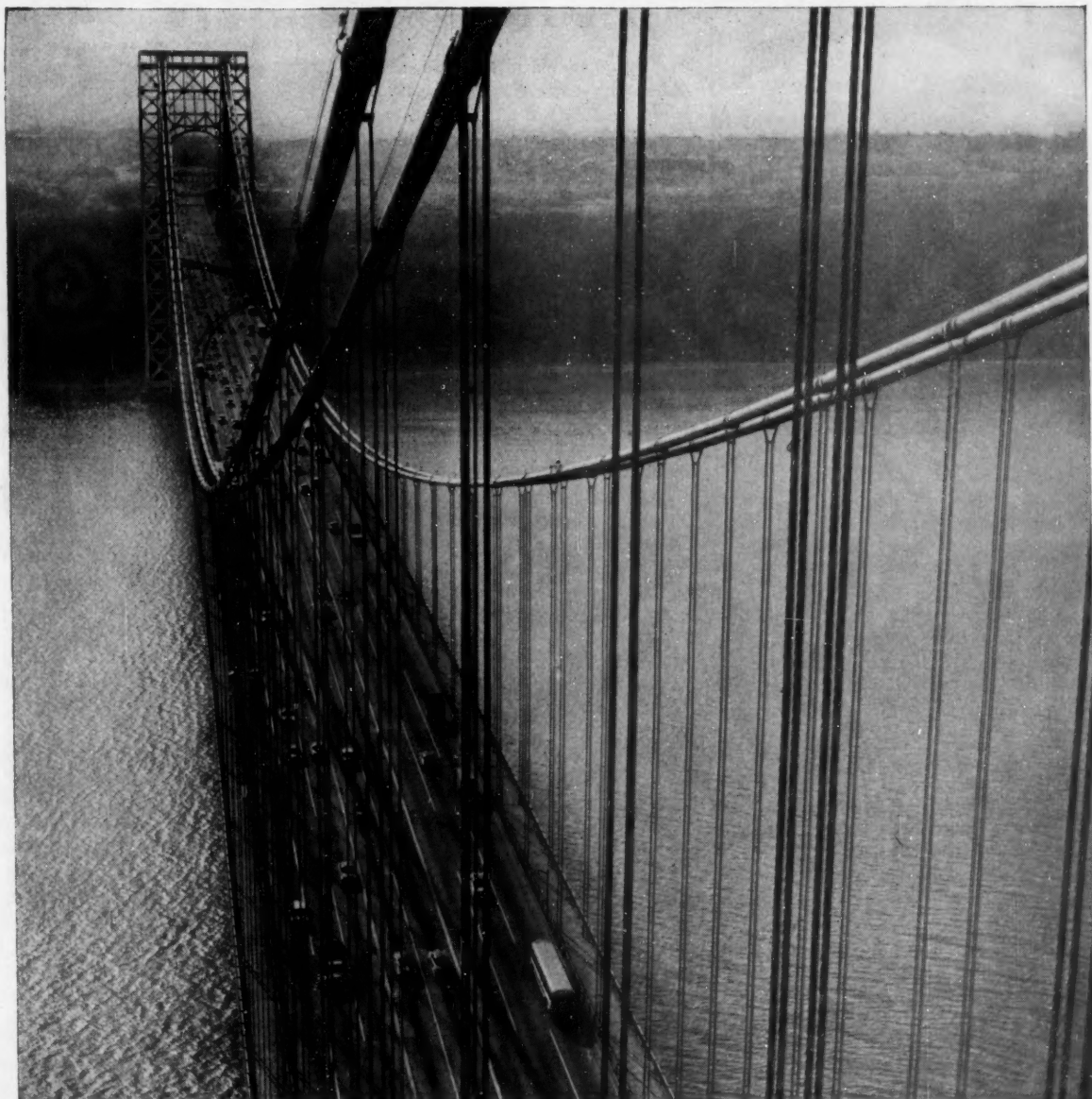
Reportedly the only country in the world without a strict air pollution law, West Germany is just now taking steps to cut down the amount of air pollution.

Lawsuits: West German courts have had to deal with scores of lawsuits filed by farmers and market gardeners seeking compensation from industrial plants for alleged crop and animal losses from chimney gases and dust. But the farmers' chances of winning

these suits are always remote. The only legal basis for compensation is a 56-year-old law that says that the use of neighboring real estate cannot be forbidden if the use with respect to air pollution corresponds to what is "customary for the respective region."

West Germany has not completely ignored the air pollution problem. The big chemical companies—with the best records and reputation for the acknowledgment of compensation claims—have led the way in the installation of modern filters in their stacks. And since 1948, no industrial boiler has been built in West Germany without a filter being installed—at an increase of 10-20% of the total construction costs.

Too Little, Too Late: But these attempts have done little to reduce West Germany's air pollution, which



GEORGE WASHINGTON BRIDGE, most traveled suspension bridge in the world, was opened to traffic in 1931 and now serves over 30 million vehicles annually.

KNOW-HOW THAT SPANS THE FIELD!

Now entering its second quarter century of service, the mighty George Washington Bridge is a prime example of the dependable performance that great skill and experience can achieve. In the industrial field, Esso Petroleum Solvents offer the same reliable performance achieved through high technical skill and constant maintenance of quality. Because Esso Petroleum Solvents must meet rigid quality standards, they combine highest product character with complete dependability. For detailed information or technical assistance, write or call: Esso Standard Oil Company, Solvents Division, 15 W. 51st Street, New York 19, N. Y.



RESEARCH AND EXPERIENCE DEVELOPED THE FINE CHARACTER OF ESSO SOLVENTS

August 11, 1956 • Chemical Week



Fast? Watch Diamond deliver Chlorinated Solvents!

You'll like the way DIAMOND promptly ships METHYLENE CHLORIDE (Dichloromethane), for example. Tank cars, drums or cans. Underwriters' rates it nonflammable under ordinary heat. Use it, up to 60 C., in the presence of air, water and light.

DIAMOND's METHYL CHLORIDE (Chloromethane) resists oxidation up to 200 C. Fine thermal stability. Little decomposition below 400 C. in the absence of air and water. Comes in tank cars only as liquefied gas under pressure.

Get technical grade CHLOROFORM from DIAMOND, too. In tank cars, drums or cans. U.S.P. grade in drums or cans. Use both with common construction materials up to 120 C.

DIAMOND makes technical grade CARBON TETRACHLORIDE, fire extinguishing fluids and grain fumigants, and also custom blends of chlorinated solvents for special applications. Order in drums or tank cars.

Another DIAMOND solvent—PERCHLORETHYLENE—is outstanding for metal degreasing as well as dry cleaning. Its pleasant, unique odor and ease of recovery help make it popular.

Put DIAMOND's chlorinated solvents line-up to work for you. Simply phone your nearby DIAMOND sales representative. Or write DIAMOND ALKALI COMPANY, 300 Union Commerce Building, Cleveland 14, Ohio.



**Diamond
Chemicals**

ADMINISTRATION

may be compared to an average New York City (excluding Staten Island) soot fall in 1955 of 63.8 tons/sq. mile, and a net annual pollution of 329 tons/sq. mile in the Los Angeles area.

There is a vigorous movement afoot in West Germany for regulations to force industry to install filters on all existing stacks. And an interparliamentary team is currently preparing an air pollution law based on recommendations and research by a number of organizations and institutes.

Industry Reluctance: Industry's lack of enthusiasm for air pollution control stems from the fact, among others, that to provide all existing factory chimneys with filters would cost an estimated 50 billion Deutsche Mark (approximately \$11.9 billion).

Citing the success the U.S. has had, West German experts are confident something can be done. Some have said that perhaps the best and simplest way "would be a law establishing a legal basis for all lawsuits regarding compensation for damages caused by waste chimney gases and dust." Experts add, "When it has to pay, industry may be more successful in finding a way to avoid such damages."

LEGAL

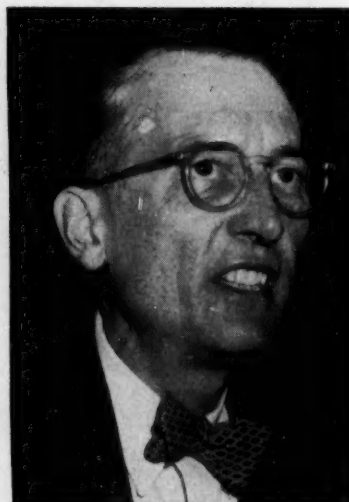
Stopette Dispute: Helene Curtis Industries, Inc. (Chicago) has asked the New York federal court to void U.S. patent 2,732,327 covering an antiperspirant stock and belonging to the Pharma-Craft Corp., wholly owned subsidiary of Distillers Corp.—Seagrams Ltd. (Montreal).

The suit seeks to restrain Pharma-Craft from threatening and interfering with Helene Curtis' right to manufacture, sell and distribute a deodorant known as Stopette.

Pharma-Craft was assigned the patent rights in question early this year.

Crop Burns: Shea Chemical Co. (Jeffersonville, Ind.) and the Indiana Farm Bureau have been named as defendants in two suits filed in the Clark County circuit court at Jeffersonville. The suits charge that Shea was responsible for "nuisance materials" (fumes, including sulfuric acid fumes) that allegedly fell and caused chemical burns to crops.

Plaintiffs in the suit are Lasch Bulb Farm—seeking \$300,000 for alleged



FDA'S LARRICK: For cooperation in policing drugs, plaudits to industry.

damages to a gladioli crop—and John C. Rasmussen, who's seeking \$5,000 for alleged damages to corn and soybean crops on his farm.

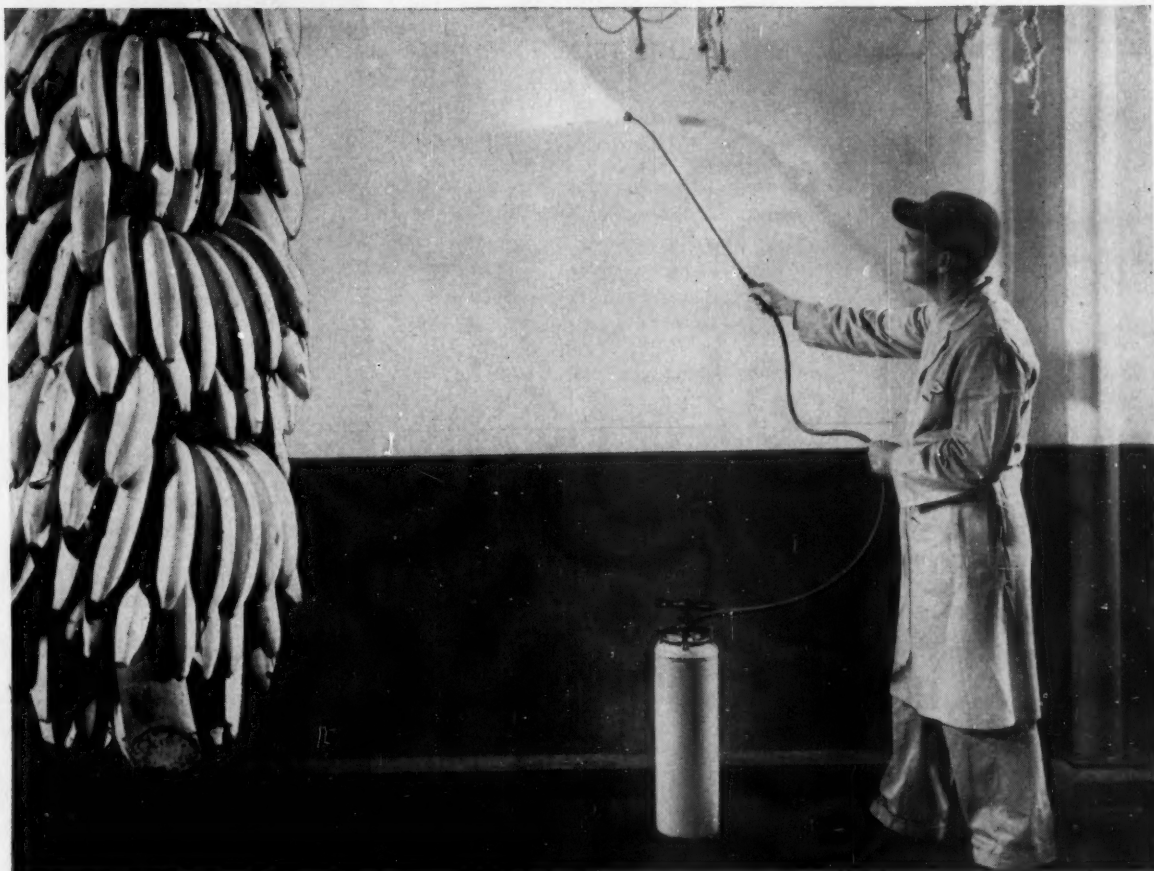
Voluntary Withdrawals: Drugs valued at more than \$146,000 were voluntarily removed from commerce and destroyed by cooperative manufacturers, according to last month's enforcement report from the U.S. Food & Drug Administration. Commissioner George Larrick says some of the lots had deteriorated in storage, others were recalled after tests showed that injury might result to users. One uncertified antibiotic—for use in animal feed—was seized by the government, and 18 court cases were terminated during June.

LABOR

Organizing List Revised: Last fortnight, in a top-level meeting of AFL-CIO officials and officers of the federation's two chemical unions, the original list of about 20 plants slated for early unionizing efforts was worked over and added to; and AFL-CIO now has okayed plans to open the organizing drive in specific territories, reinforced by AFL-CIO funds and staff members.

While union leaders declined to discuss specific targets, it was learned that Oil, Chemical & Atomic Workers (AFL-CIO) got approval and backing for a campaign at Procter & Gamble

Vital protection where it's needed most



DOWICIDE A protects fresh produce against mildew and bacteria

Dowicide® A effectively retards growth of harmful bacteria and fungi when sprayed on walls, ceilings, floors and other surfaces of storage and curing rooms. Fresh fruit and vegetables are protected against possible contamination, decay losses are reduced.

This highly active, low-odor germicide checks mildew,

mold and bacteria growth in food storage rooms, food lockers, breweries, warehouses, wherever control of micro-organisms is needed. In 1% solution it's easy to apply as a spray or wash, and it gives long-lasting protection.

There are a total of fourteen Dowicide preservatives, each with special properties for different product protection jobs. Adhesives, waxes, building materials, petroleum, textiles, pulp and paper—the list of useful applications is endless! Often Dowicide adds years to the life of a product or makes the difference between unsanitary and sanitary conditions.

Find out how Dowicide preservatives can improve your product or plant operation. Clip the handy coupon today and mail it to THE DOW CHEMICAL COMPANY, Midland, Michigan.

THE DOW CHEMICAL COMPANY, Dept. DP 963A-1, Midland, Michigan

Please send me further information on the uses of Dowicide preservatives. My business is _____

NAME _____ TITLE _____

FIRM _____ ADDRESS _____

CITY _____ ZONE _____ STATE _____

you can depend on
DOW CHEMICALS



A Brighter Future for Teeth...with Tin Chemicals

A CENTURY AGO



tin was playing an interesting role in dentistry—as a filling for teeth. Because tin is more readily attacked by acids than is tooth enamel, the filling was slowly eaten away, while the tooth remained intact. Tin-filled teeth more than forty years old were reported in the dental journals of the day.



TODAY to help teeth last longer, a tin chemical is added to tooth paste. Its history is interesting. For a long time water-borne fluorides have been known to be highly effective against the incidence of tooth decay. To make this protection available in a toothpaste, a form of fluoride was needed that would retain this beneficial characteristic and, in addition, be mild to the human system. M & T Stannous Fluoride is providing the answer to dentistry's need for a product with these specific characteristics.

THE VERSALITY OF TIN CHEMICALS is by no means limited to dentistry. In any field—automotive, aviation, textile, food, plastics—if you're looking for ways to lower costs or improve techniques, it will pay you to get in touch with us—

TIN & TIN CHEMICALS
CERAMIC MATERIALS
ORGANIC COATINGS
WELDING SUPPLIES
RADIOGRAPHIC EQUIPMENT
PLATING MATERIALS
METALS & ALLOYS
HEAVY MELTING SCRAP

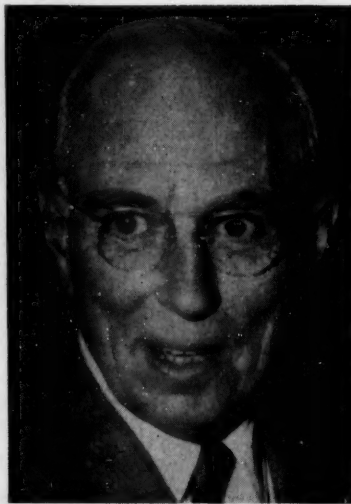


"First Name in Tin Chemicals"

**METAL & THERMIT
CORPORATION**

GENERAL OFFICES: RANWAY, NEW JERSEY

ADMINISTRATION



WIDE WORLD

NLRB'S BEAN: After six months, newest member is under union fire.

plants, where hourly paid employees long have been represented by independent associations.

Border State Elections: In two recent chemical plant elections in so-called border states, the AFL-CIO chemical unions won one, lost one.

- In Baltimore, International Chemical Workers Union (AFL-CIO) edged out District 50, United Mine Workers, to retain its hold at the Curtis Bay plant of W. R. Grace & Co.'s Davison Chemical Co. Division.

- At New Martinsville, W. Va., where both AFL-CIO chemical unions were competing to represent employees at Mobay's new plant, the workers rejected both ICWU and OCAW, cast their ballots for "no union."

Plantwide Bargaining: A new opportunity for the National Labor Relations Board to elaborate its mixed policy on plantwide vs. craft bargaining is the company-union clash pending before an NLRB hearing examiner in Binghamton, N.Y. The case—involving processing and reprocessing of leather in a single, integrated plant—appears to closely parallel a situation that's common in the chemical industry (which has gone on record as favoring plantwide bargaining).

In another case, NLRB's newest member—Maryland lawyer Stephen Bean, ex-mayor of Woburn, Mass.—has incurred the wrath of chemical

new perspective on petrochemicals



Products based on methane, ethane and propane have grown phenomenally during the past decade. Petro-Tex believes that butane-derived chemicals such as butadiene, n-butylene 1, and n-butylene 2 will experience comparable growth. Soon these four-carbon building blocks will be freely available at attractive prices.

While continuing as an important rubber-industry supplier, we are in a unique position to foster important new markets for butadiene and are presently expanding capacity to provide the needs of new users.

Discussions that may lead to mutually-beneficial long-term associations are welcome.

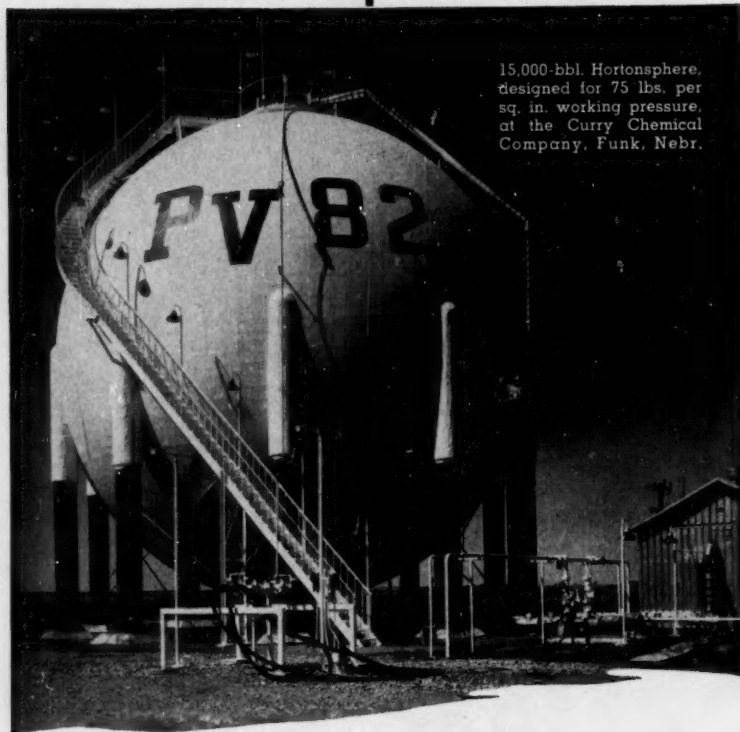


PETRO-TEX CHEMICAL CORPORATION
HOUSTON 1, TEXAS

A JOINT ENTERPRISE OF
FOOD MACHINERY AND CHEMICAL CORPORATION AND TENNESSEE GAS TRANSMISSION COMPANY

HORTONSPHERE

*Keeps a "firm hand" on
Anhydrous Ammonia
in Storage*



15,000-bbl. Hortonsphere, designed for 75 lbs. per sq. in. working pressure, at the Curry Chemical Company, Funk, Nebr.

Designed for working pressures up to 75 lbs. per sq. in., the 15,000-bbl. Hortonsphere® above is used to store anhydrous ammonia at the Curry Chemical Company, Funk, Nebraska. This CB&I welded steel structure is designed to withstand internal pressure and will not allow contents to escape as long as the setting of the pressure relief valves are not exceeded. This Hortonsphere is also insulated and refrigerated to further guard against the loss of the stored anhydrous ammonia.

Write today for further information or estimates on Hortonspheres. They are available in sizes to 30,000 bbls. and in pressures to 217 lbs. per sq. in. in the smaller sizes.

Chicago Bridge & Iron Company

Atlanta • Birmingham • Boston • Chicago • Cleveland • Detroit • Houston
Los Angeles • New York • Philadelphia • Pittsburgh • Salt Lake City
San Francisco • Seattle • Tulsa

Plants in
BIRMINGHAM, CHICAGO, SALT LAKE CITY and GREENVILLE, PA.



ADMINISTRATION

unions for siding with the Republican majority in the Patterson-Sargent case. OCAW says it may ask the federal courts to overturn the NLRB decision upholding the paint company's discharge of six OCAW strikers who urged the public not to buy BPS products made during a 1954 strike at the firm's Cleveland plant.

KEY CHANGES

Albert D. Penick, to president, New York Quinine & Chemical Works, Inc. (New York).

John W. McGovern, to executive vice-president, U.S. Rubber (New York).

George M. Halsey, to vice-president, Chemicals-Pigments-Metals Division, Glidden Co. (Cleveland).

E. E. Stewart, to director, McKesson & Robbins, Inc. (New York).

Philip B. Stull, to director, American Enka Corp. (Enka, N.C.).

Kenneth H. Hannan, to executive vice-president, Union Carbide and Carbon (New York).

Chester W. Anderson, to vice-president in charge of manufacturing and distribution, Rexall Drug Co. (Los Angeles).

James F. Brownlee, to director, Spencer Chemical Co. (Kansas City, Mo.).

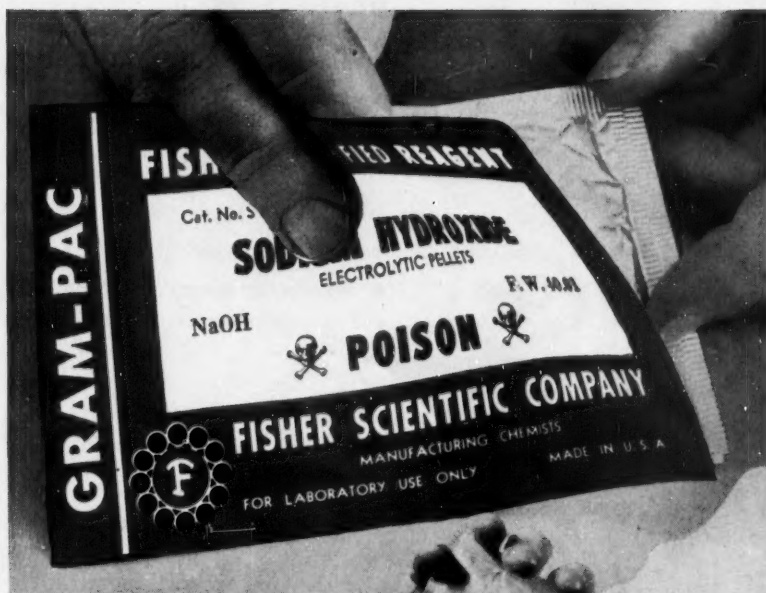
P. J. O'Brien, to vice-president and general manager; **Paul Speer** and **N. C. Pearson**, to vice-presidents; **R. F. Steel**, to secretary and treasurer; **H. M. Albright**, to consultant; **J. F. Corkill**, to vice-president and general manager, Pacific Coast Borax Co. Division; **Dean R. Gidney**, to vice-president and general manager, U.S. Potash Co. Division; **D. V. Parker**, to vice-president, 20 Mule Team Products Division; **G. A. Connell**, to vice-president, and **D. S. Taylor**, to director, Research Division; all of U.S. Borax & Chemical Corp. (New York).

RETIRED

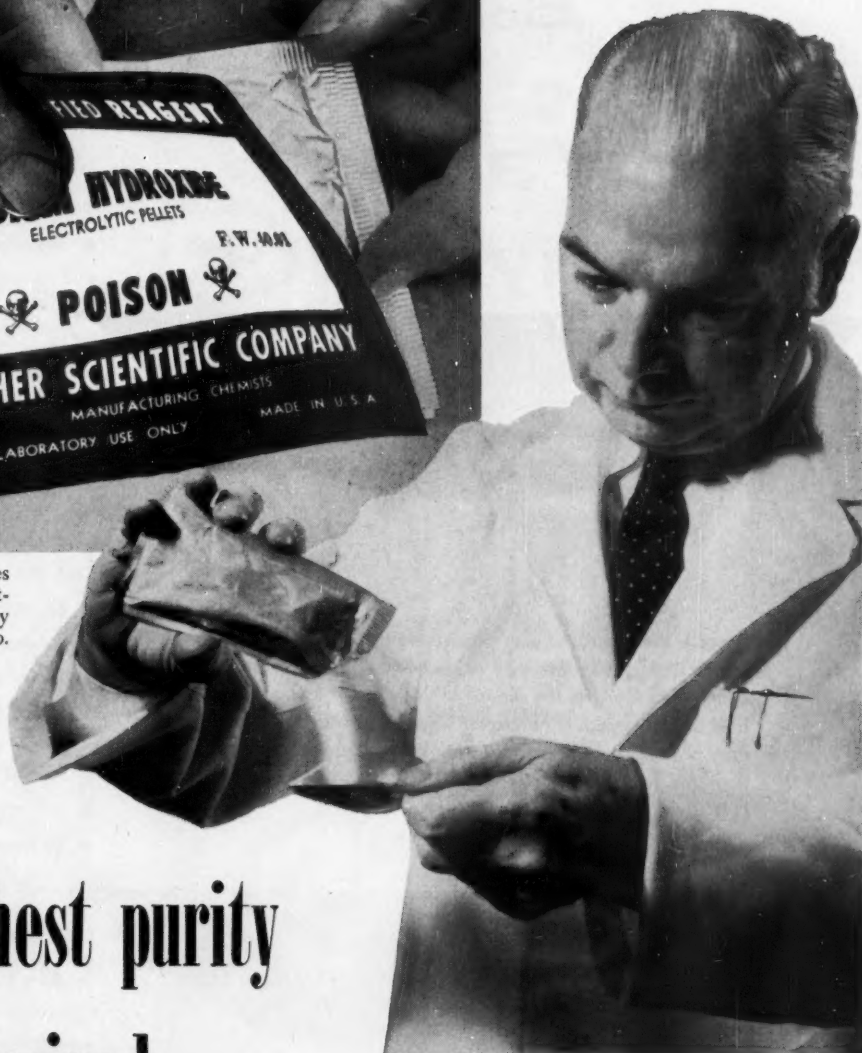
John P. Ruth, vice-president, Glidden Co. (Cleveland).

DIED

Elias D. Cohen, 74, vice-president, director, and member of the executive committee, National Starch Products, Inc. (New York), at New York.



"Gram-Pac" disposable packages for chemicals, with an inner coating of polyethylene, are made by Dobeckmun Co., Cleveland, Ohio.



When highest purity is required

A coating of BAKELITE Brand Polyethylene Resin forms the inner lining of three-layer "Gram-Pac" envelopes developed by Fisher Scientific Company, Pittsburgh 19, Pa.

"The contents are reagents," they explain, "so pure they can be used for research and analytical work. Any contamination would be serious. Hence, inert polyethylene is used as the layer closest to the reagent."

From tiny packages like these to large drums, linings of polyethylene are serving many profitable purposes, and at desirable savings as well.

*It pays to package in
film made of*



BAKELITE COMPANY, A Division of Union Carbide and Carbon Corporation **UCC** 30 East 42nd Street, New York 17, N. Y.

The term BAKELITE and the Trefoil Symbol are registered trade-marks of UCC

Eastman

acids and anhydrides

— "the standard of the industry"

Simplify the control of your processing operations with uniformly high quality Eastman acids and anhydrides. Known as the "standard of the industry," they are your assurance of a uniform product no matter when or in what quantities they are ordered. For more information, samples or specifications, write to Eastman Chemical Products, Inc., Chemicals Division, Kingsport, Tennessee.

Eastman

CHEMICAL PRODUCTS, INC.

KINGSPORT, TENNESSEE

subsidiary of Eastman Kodak Company

acetic acid

- Organic synthesis
- Reaction medium and solvent
- Dyeing assistant,

acetic anhydride

- Acetylating agent
- Dehydrating agent in nitration and sulfonation reactions, etc.

propionic acid

- Ca or Na salt used as bread mold inhibitor
- Raw material for herbicides

n-butyric acid

- For the preparation of butyric esters useful in formulating perfumes and flavorings

n-butyric anhydride

- Acylating agent
- Intermediate

isobutyric acid

- As a starting point for the synthesis of plasticizers, perfume materials and lacquer solvents

isobutyric anhydride

- For the preparation of aromatic esters for perfumes

2-ethyl hexoic acid

- Pb, Mn and Co salts are used as oil paint driers
- Zn and Na salts are used as emulsifying and dispersing agents

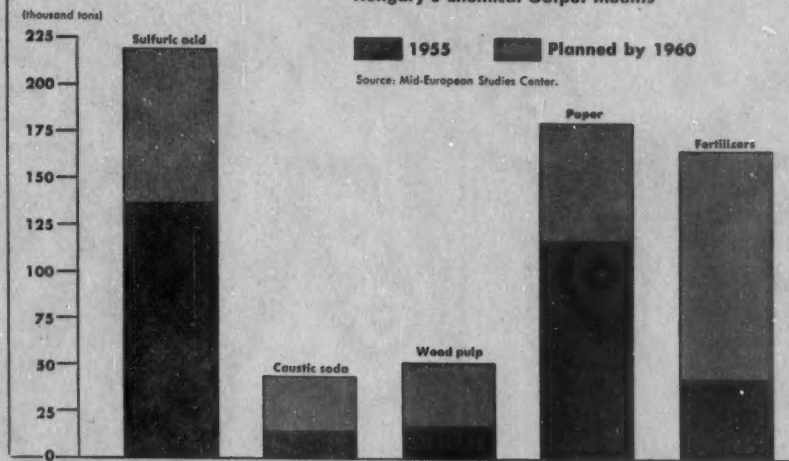
SALES OFFICES: Eastman Chemical Products, Inc., Kingsport, Tennessee; New York City; Framingham, Massachusetts; Cincinnati; Cleveland; Chicago; Houston; St. Louis. **West Coast:** Wilson Meyer Co., San Francisco; Los Angeles; Portland; Salt Lake City; Seattle.

Charting Business

CHEMICAL WEEK
August 11, 1956

BIG PLANNING BEHIND THE IRON CURTAIN

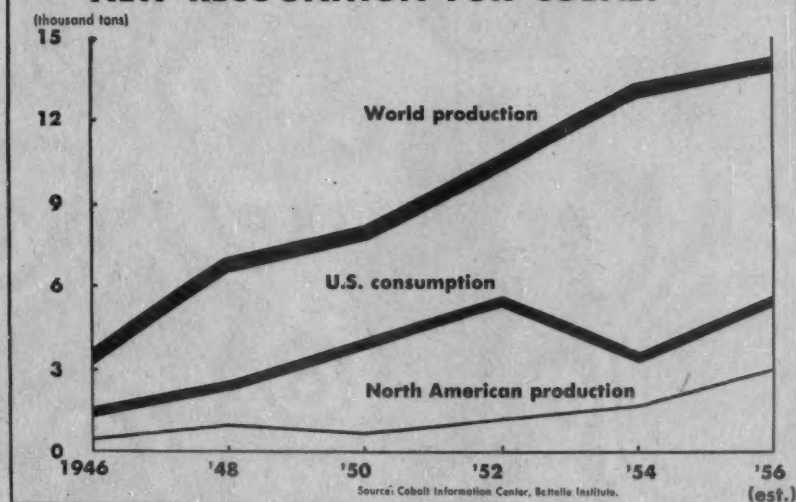
Hungary's Chemical Output Mounts



THE U.S. chemical producers do not regard Russia's satellites as strong competitors in world markets. But the production planning now under way in those countries could change this picture. Hungary, for example, plans a 245% increase in caustic soda, a 62% increase in

sulfuric acid, a 55% increase in paper, and a 275% increase in fertilizers by 1960. Now, the primary objective in these countries is to meet internal demand. Later, they may attempt to elbow their way into export markets outside Iron Curtain boundaries.

NEW RECOGNITION FOR COBALT

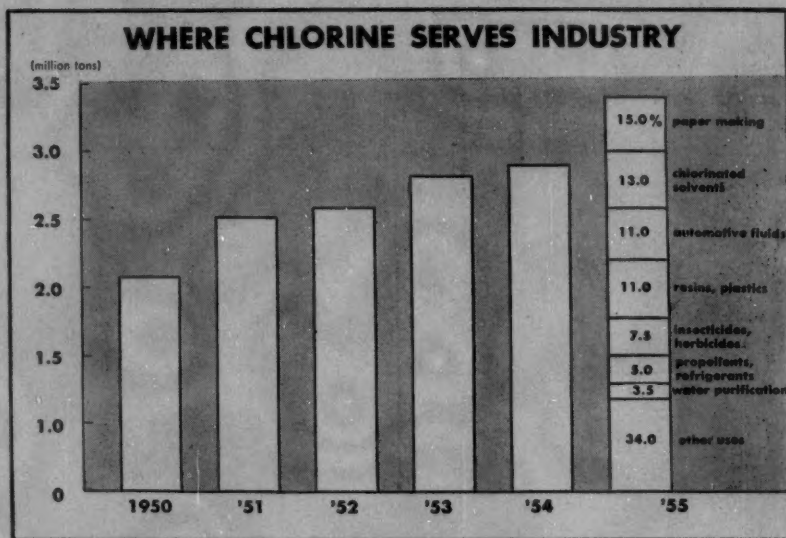


WIDESPREAD industrial use of cobalt in recent years has caused a near-doubling of world production in five years—8,000 short tons in 1950, 14,000 short tons in '55. Today, cobalt is used in more than 150 basic applications

in metallurgical, chemical, ceramics, pharmaceutical and nucleonics industries. About 55% of U.S.-consumed cobalt is produced in North America. More than 33% of this ends up in high-temperature alloys, 28% in the production of magnets.

Charting Business

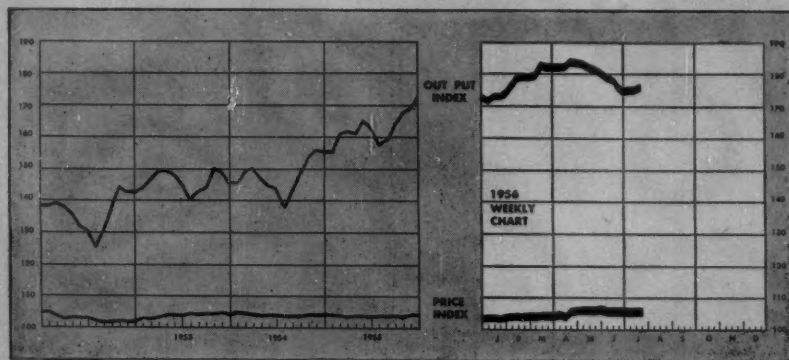
(Continued)



CHLORINE production has climbed 65% in five years (*CW*, Jan. 7, p. 73), but current capacity (11,000 tons/day) may soon be inadequate. Application in the paper industry, which now

takes up to 15% of all chlorine consumed, is expanding. And vinyl chloride output is due to increase. Other chlorine growth opportunities also exist. By 1960, chlorine production may be 4 million tons/year.

BUSINESS INDICATORS



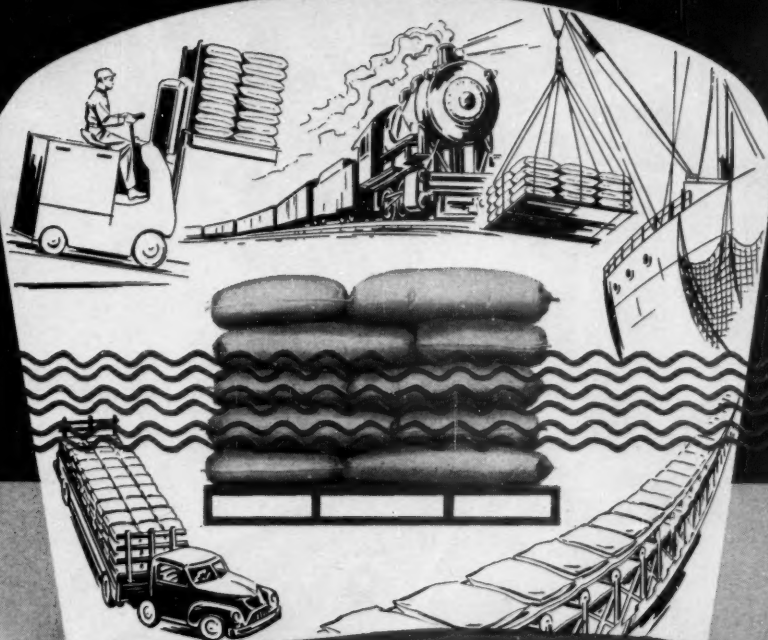
WEEKLY

	Latest Week	Preceding Week	Year Ago
Chemical Week Output Index (1947-49=100)	174.5	175.5 (r)	158.5
Chemical Week Wholesale Price Index (1947=100)	105.4	105.5	104.1
Stock Price Index of 11 Chemical Companies (Standard & Poor's Corp.)	492.0	491.8	451.6

MONTHLY Employment (Thousands)

	Latest Month	Preceding Month	Year Ago
All Manufacturing	13,052	13,030	13,086
Nondurable Goods	5,483	5,423	5,456
Chemicals and Allied Products	553.9	560.1	544.8

greatest **SLIP PREVENTION** ever



NOW.....
SPECIFY

HUDSON
Magnetized
MULTIWALLS

Here is a new high in preventing slippage. You can't see Hudson's "Magnetized" coating, or feel it. But "Magnetized" sacks, when stacked, actually clutch each other. This coating holds in tilt tests up to 40°. Now, for only pennies

more, you can safeguard your shipments; avert accidents in customer's storage. Let us demonstrate this safer finish. We think you will see that the extra security pays for itself many times over. Write for details, or use the coupon.



HUDSON PULP & PAPER CORP.
477 MADISON AVENUE • N.Y. 22, N.Y.

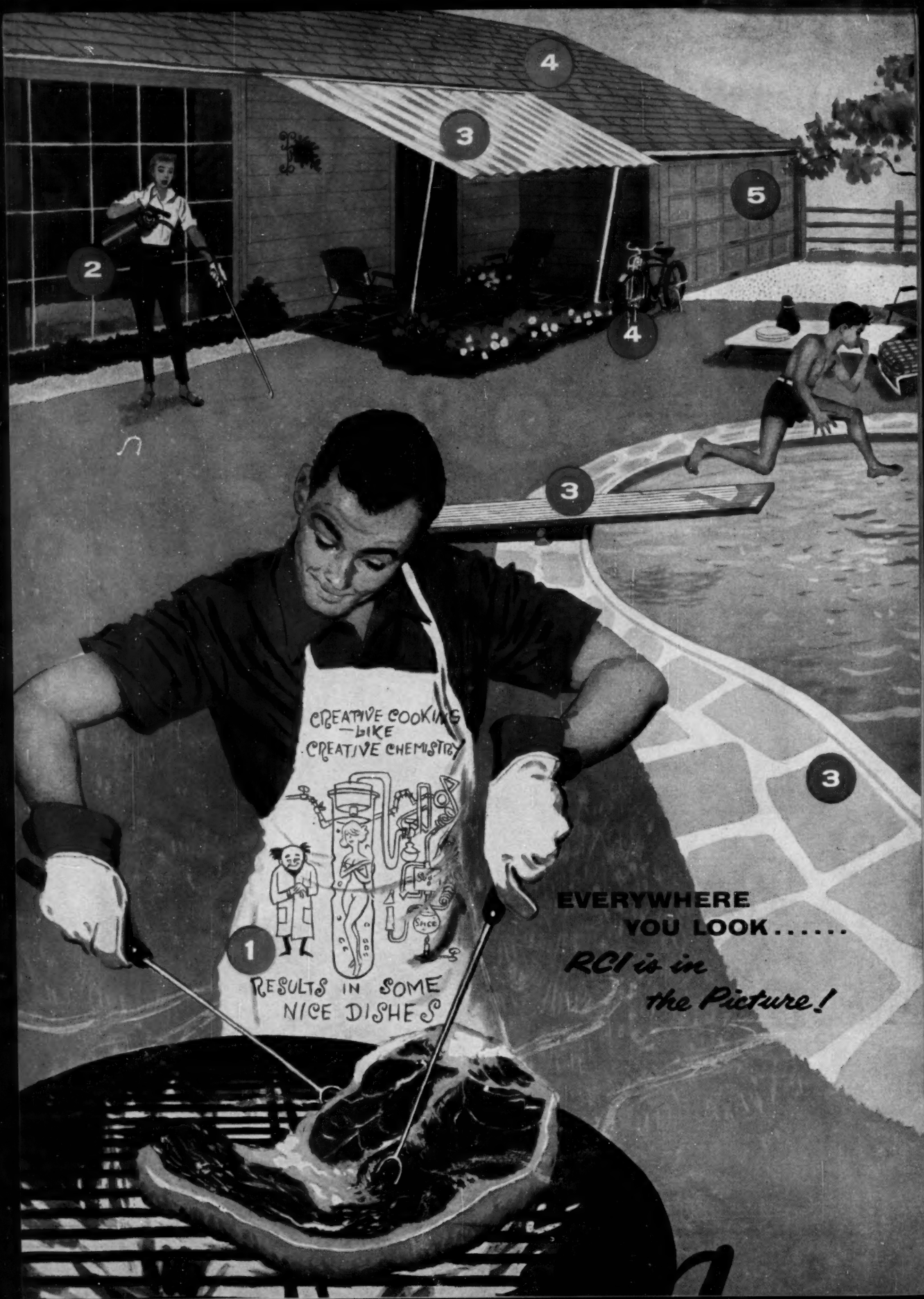
Plants at
PINE BLUFF, ARK. PALATKA, FLA.
WELLSBURG, W. VA.

HUDSON PULP & PAPER CORP.
477 MADISON AVENUE • NEW YORK 22, N. Y.

GENTLEMEN: I would like to know more about "Magnetized" Multiwalls. Please send me your test sample folder.

NAME _____ TITLE _____
COMPANY _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____

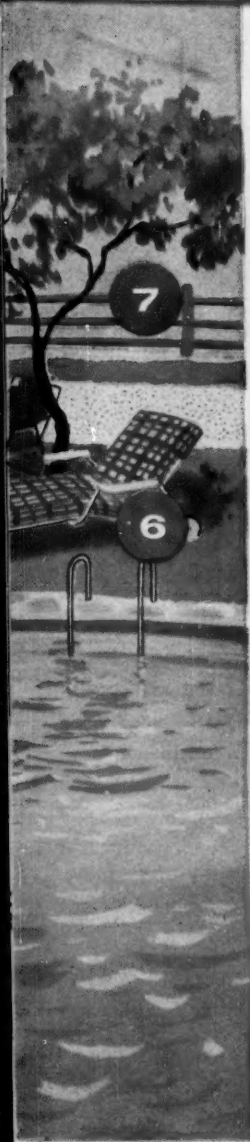
the ENOUGH that makes the difference



EVERYWHERE
YOU LOOK.....

*RCA is in
the Picture!*

EVEN THE APRON TIES IN WITH RCI



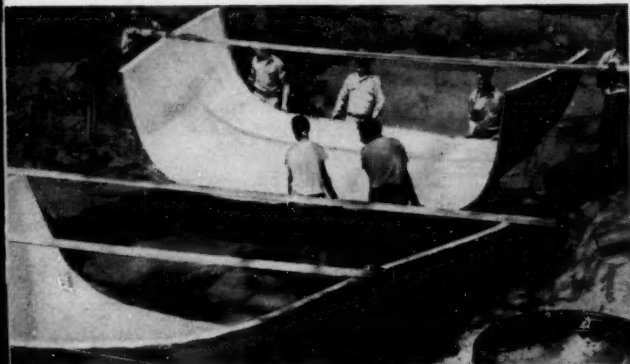
- 1 **RCI phthalic anhydride** — The "Creative Cooking" apron shown at left is made of tough vinyl film. RCI is a dependable source for phthalic anhydride which is the base for so many vinyl plasticizers.
- 2 **RCI phenol** — whether you make weed killers or use phenol in manufacturing synthetic resins, Reichhold can make fast delivery via drum or tank car wherever your plant is located.
- 3 **RCI polyester resins** — reinforced with fibrous glass have ideal properties for architectural panels like the patio roof shown here . . . also for economical plastic swimming pools and safe, waterproof diving board surfaces.
- 4 **RCI chemical colors** — lend brightness to asphalt shingles (via granule coating) . . . help give lasting beauty to paints for bicycles and metal toys.
- 5 **RCI phenol-formaldehyde resins** — find a major use as strong, water-resistant adhesives for exterior fir plywood.
- 6 **RCI surface coating resins** — The exceptionally complete RCI line includes high quality alkyds (based on RCI glycerine, phthalic anhydride and pentaerythritol) for manufacturing a great many special finishes . . . such as enamels for outdoor furniture.
- 7 **RCI pentachlorophenol** — in preservative solutions helps make wood exposed to weather last up to 4 times as long as untreated wood.

Which one of these materials do you need?

The next time you have a supply problem (or a technical problem) take a look at RCI. See where fast delivery of these quality-controlled RCI materials (and the additional ones listed with our signature) can help you.

Piecing a pool together — it takes no time to assemble the light weight, durable sections of this plastic pool. Low-cost and easy-to-maintain, the pool is made of reinforced RCI POLYLITE polyester resin.

MALEIC ANHYDRIDE — Reichhold produces and sells this important basic chemical; and uses it in making POLYLITE polyester resins. Here RCI operator checks main controls in maleic plant.



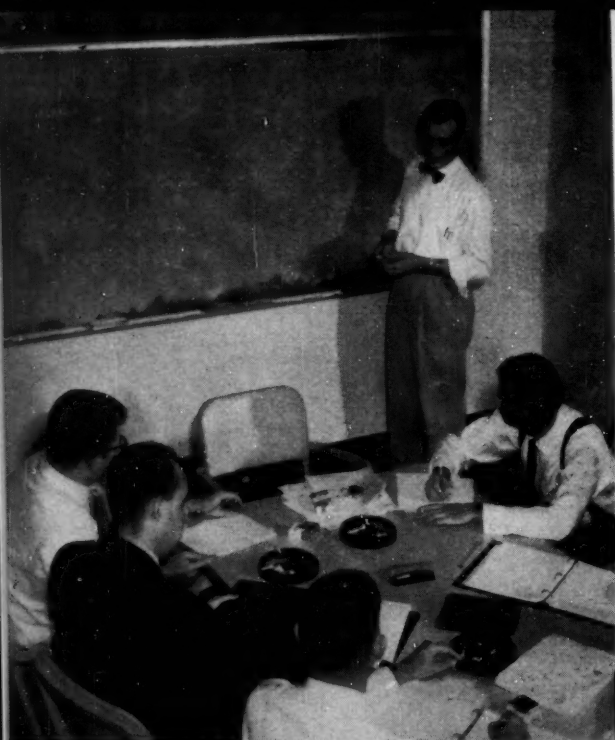
Creative Chemistry . . .
Your Partner
in Progress



REICHHOLD

Synthetic Resins • Chemical Colors • Industrial Adhesives • Plasticizers
Phenol • Formaldehyde • Glycerine • Phthalic Anhydride • Maleic Anhydride
Sodium Sulfite • Pentaerythritol • Pentachlorophenol • Sulfuric Acid

REICHHOLD CHEMICALS, INC., RCI BUILDING, WHITE PLAINS, N. Y.



1st Phase— Chemistry lectures assure nontechnical men an acquaintance with the field.



2nd Phase— Psychological tests come in orientation period, as do facts on company and industry.

Human Relations: New Sales Training Pitch

In a small cubicle lined with one-way glass panels, two future salesmen for Dow Chemical last week acted out the roles of purchasing agent and chemical seller. Outside the cubicle, in a darkened classroom, 30 sales trainees intently watched the ad-lib

dramatization of a sales problem that had been carefully selected from the company's records.

"Role-playing" is a new and important part of Dow's recently overhauled sales training program. The course teaches a type of salesmanship

that stresses human relations and emphatic analysis of the buyer's situation, can turn a nontechnically trained man into an effective salesman of technical products and generally breaks sharply with many established concepts of sales training.

Many popular notions about sales training, asserts Frederick W. Dow, sales training manager, are largely worthless and often harmful.

Particularly useless in his opinion: "canned sales talk"; "100 guaranteed closing phrases"; nine steps to developing pleasing persuasiveness; the "yes, but" technique; the "arouse interest, make presentation, close sale" method and other patented pitches.

Problems Differ: Such selling, says training manager Dow, suffers from the glaring weakness of superficiality. The methods attempt to trick or manipulate the buyer into a purchase. Further, "such methods do not develop long-term relationships because they do not come to grips with the real needs of the customer."

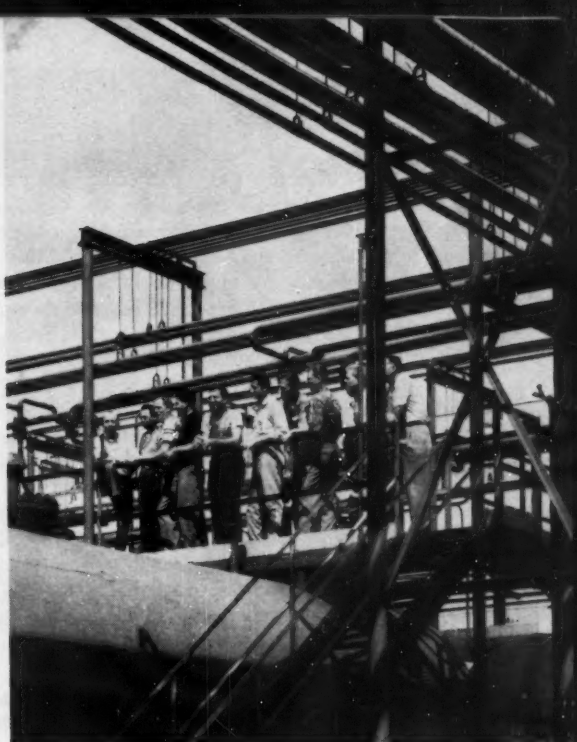
Sales training, he adds, must go beyond merely providing information about the company and its products. It must show that the problems of



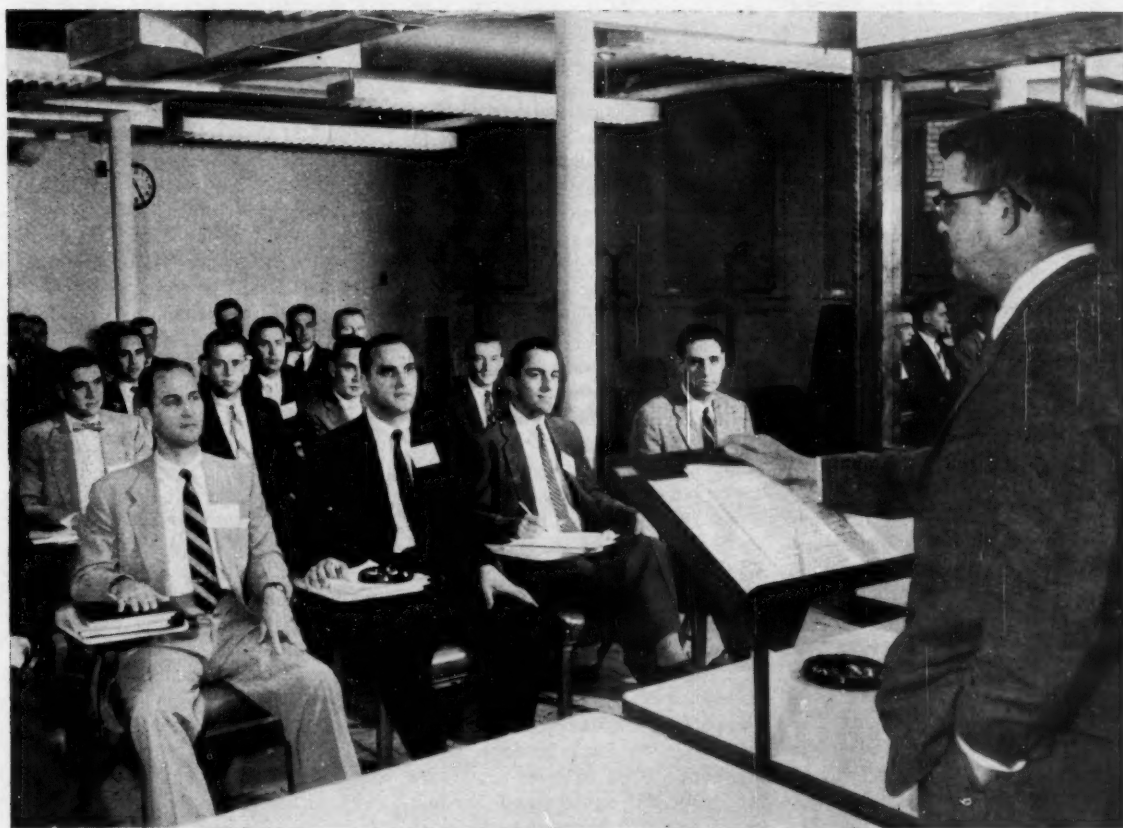
6th Phase— Learning product end-uses can take up to four months.



3rd Phase— Key part of four-week sales office stint: making calls with experienced salesmen.



4th Phase— Students study production in month-long tour of Midland divisions.



5th Phase— Frederick Dow keynotes sales clinic, stresses selling by problem analysis, human relations.

SALES

communication and human relations are different for each and every sales situation. The salesman must learn how to relate himself to his customers, how to recognize and apply the elements of psychology operating in the communication of ideas. Skill in human relations can help the salesman determine the real sales problems (often different from the first objections posed by the purchasing agent). And the same skill can help him present a solution of the problem in terms of the company's products or services.

If the attributes that are important in "selling-by-communication" (intelligence, personality, empathy, analytical ability, drive, dominance, etc.) are noted in a nontechnically trained man, he can be taught to sell technical products.

That's Dow's idea. To instill arts of selling, impart product and company information, Dow puts sales force candidates through an intensive, seven-phase program.

Company Chemistry: The first part of the syllabus consists of an intensive week-long course in the fundamentals of chemistry, particularly the chemistry of Dow products, for trainees who have not had organic chemistry in college.

In the next phase, an orientation period (four weeks), students learn the characteristics of the chemical industry, who the major companies are and how they operate, and facts about Dow. Students study Dow's corporate organization, learn about the raw materials the company uses and how they relate to Dow's major products.

Further lectures describe the markets in which the company sells, the end-use of its products, and sales administration.

The fledgling salesmen are then assigned to a sales office for four weeks. They study office procedure, serve as inside salesmen (handling telephone queries and correspondence), and travel with the district salesman. Here the trainees note how the experienced salesman analyzes sales problems, finds the solutions. At the end of the office training, the students write reports describing the office and warehousing operations and other administrative phases in terms of customer benefits; these provide narrative accounts of their experiences

and include a call report for every account visited.

Divisional Tours: For the next four weeks, trainees tour Dow's Midland divisions to get the "production and research viewpoint." Students learn, for example, what it means to change a specification, why simple customer requests may be difficult to meet in practice. The future salesmen also get acquainted with production personnel, familiarize themselves with laboratory and technical service facilities, spend some time in the purchasing department and participate in a driver-safety program. Trainees destined for chemical sales spend an additional 5-6 weeks in the Midland divisions.

Sales Clinic: About 40% of the four-week session is devoted to lectures that explain such things as the sales function of advertising, packaging and traffic, how to remember faces and names, sales parlance, etc.

Education—by means of role-playing—in the arts of salesmanship occupies most of the remaining time. About 20 cases are acted out from write-ups that are designed to stimulate thought on a specific sales problem. Each student acts the part of a salesman at least once, usually several times.

The conversations are tape-recorded and then played back to the class for analysis. Under skillful guidance of the instructor, the group dissects the interview, offers alternative interpretations and solutions of the problem.

Lectures by the company psychologist point out the emotional factors present in industrial buying, suggest means (example: nondirective questioning) by which salesmen may determine them.

Product End-Use Training: Complete understanding of the use of company products is the aim of this major phase of training. It lasts from 2 to 18 weeks, depends on which production division the student is assigned to. The molding powder sales trainee, for example, will learn how Dow products are used in basic molding operations.

Voluminous quantities of literature are provided, and students acquire skill in matching attributes of the firm's products to the job to be done. Training is conducted in small groups by the technical service and product managers, and helps give the non-technical man sufficient knowledge to

sell technical products. A six-month break-in period of field training (at a sales office) follows product end-use training.

Ahead: Future improvements will likely be incorporated in Dow's training programs. Introduction of more psychology into the curriculum to help salesmen cope with the emotional factors in buying is one aim. Another projected plan will integrate orientation lectures and the tour of the Midland divisions. This will place the lecture and the actual inspection of the subject covered in the lectures next to each other, and will boost comprehension.

Regardless of how the course evolves, Dow's basic concepts of sales training are not likely to change much. The company will continue to stress problem analysis, the empathic and psychological understanding of the buyer, and the ability to think in terms of how the company's products and services can benefit the customer. Using this approach, Dow feels it can equip the technical and nontechnical man alike to sell complex products in a tough competitive market.

Class for Tank Truckers

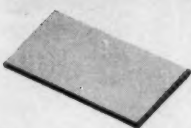
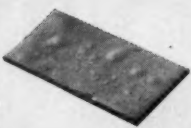
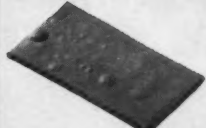
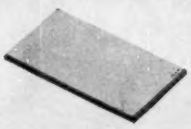
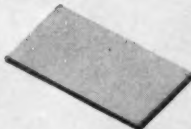
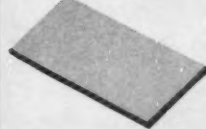

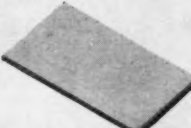
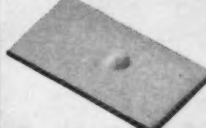



Later this month (August 27-30) some 100 tank truck operators, tank manufacturers and chemical industry traffic representatives will gather at Michigan State University for a four-day course dealing with problems of hauling chemicals, gases, and other products in tank trucks.

The first such course, started last year at Illinois Institute of Technology, was oversubscribed. Response was enthusiastic from truckers and others who are hard pressed to keep abreast of handling procedures for new products.

The introduction of many new products in recent years has made this a real problem.

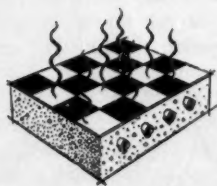
This year's program—completely new—will cover safety; selection and maintenance of materials used in tank construction; hoses; pumps; valves; linings; coatings; weighing and sampling procedures; heating and insulation of tank trucks; and latest developments in design.

Lecture sessions will also include talks on communicating technical information to operating employees; economics of tank truck transporta-

Heat Stability at 300°F	0 Minutes	20 Minutes	30 Minutes
Diethyl Phthalate -50 parts			
Paraplex G-62 -15 parts Diethyl Phthalate -35 parts			
Tricresyl Phosphate -50 parts			
Paraplex G-62 -15 parts Tricresyl Phosphate -35 parts			

PARAPLEX G-62

helps you get color uniformity in vinyl tiles



PARAPLEX G-62 simplifies the manufacture of vinyl floor tile . . . gives added life to tile in use.

The samples of vinyl floor tile above illustrate the superiority of PARAPLEX G-62 over conventional plasticizers in providing heat stability to vinyl compounds. This stability lets you mill vinyl compounds at high temperatures . . . helps keep them from deterioration and discoloration. The result? Shorter processing cycles, increased production.

In use, vinyl compounds such as tile also benefit from PARAPLEX G-62. Because the plasticizer is relatively non-volatile, loss from tile laid over radiant heating, for example, is held to a minimum. In addition to all this, PARAPLEX G-62 resists attack by ultraviolet light and extraction by soap, detergent, fat, grease, and oil.

For more information on all of the plasticizers produced by Rohm & Haas Company, ask for *What You Should Know About PARAPLEX and MONOPLEX Plasticizers*.

PARAPLEX and MONOPLEX are trademarks, Reg. U. S. Pat. Off. and in principal foreign countries.



Chemicals for Industry

**ROHM & HAAS
COMPANY**

THE RESINOUS PRODUCTS DIVISION
Washington Square, Philadelphia 5, Pa.

Representatives in principal foreign countries



—Dredge Mining in South Carolina

speaking of heavy minerals....

VITRO'S across-the-board position in atomic energy and related technologies gives it unusual insight into untapped industrial potentials. From this vantage point, it has diversified into rare earths and heavy minerals through association with Crane Co. in the operation of Heavy Minerals Co.

Heavy Minerals owns large deposits of source materials for thorium, titanium, zirconium, and rare earth ores near Aiken, S. C., and Panama City, Fla. A processing plant under construction at Chattanooga, Tenn., will produce thorium and thorium compounds, misch metal, rare earth chemicals, zirconium compounds and related products. Pechiney of France, holder of many patents in rare earths and heavy minerals, retains a minority interest in the company.

Heavy Minerals' deposits contain a number of heavier rare earths including europium, gadolinium and yttrium, many of which are considered important in nuclear development.

There are many projected uses for these products in the field of nuclear applications for control and shielding, x-ray sources, capacitors, vacuum tubes, television color tubes and catalytic reactions. New and unique production processes by Heavy Minerals Co. make these products available in separated forms at high purities and greater quantities.

For detailed information write **HEAVY MINERALS CO.**, an associated company of

Vitro

CORPORATION of AMERICA
261 Madison Ave., New York 16

☞ Research, development, weapons systems

☞ Nuclear and process engineering, design

☞ Refinery engineering, design, construction

☞ Uranium mining, milling, processing, refining

☞ Rare metals, rare earths, heavy minerals

☞ Ceramic colors, pigments, fine chemicals

SALES

tion; and relationship of tank truck carriers to shippers.

The course is sponsored by Michigan State University and the National Tank Truck Carriers, Inc., in cooperation with the Manufacturing Chemists' Assn. and National Truck Tank & Trailer Tank Institute.

Tab for tuition (which includes material, complete transcript, certificate of attendance and three lunches): \$50. Accommodations on the university grounds for four days: \$30.

Most registrations are already in; others must be made before Aug. 20. NTTC's address: 1424 Sixteenth St., Washington, D.C.

World View in View

U.S. manufacturers of chemicals, rubber, plastics and petroleum products will get a good look at their foreign competition next spring during the first U.S. World Trade Fair, April 14-27 at New York's Coliseum.

Twenty-three nations* are already slated to be represented.

Plans are to show 3,000 exhibits from 71 nations to an estimated 100,000 buyers from all parts of the Western Hemisphere and to an estimated 1 million of the general public.

Items for exhibit will be classified according to nine main groups covering some 60 different types of goods. Group 9 will probably be of most interest to chemical people. It's the basic materials group, includes steel, aluminum, copper, brass, plastics, chemicals, rubber, petroleum products.

U.S. embassies and consulates are beating the drum for the show, have set up information programs to sell the idea to foreign companies. Also, U.S. Dept. of Commerce representatives in each country are bringing the exposition to the attention of government officials, business communities, trade associations and chambers of commerce.

To offset the cost of participating in the exposition, many countries have, or are in the process of setting up, subsidies for manufacturers desiring to exhibit. When these subsidies materialize, the number of participants will likely increase to close to the 3,000 goal set by the fair's planners.

*Brazil, Canada, Ceylon, Denmark, Finland, France, West Germany, Great Britain, Greece, India, Ireland, Israel, Italy, Japan, Korea, Lebanon, Netherlands, Norway, Pakistan, Sweden, Turkey, Venezuela and Yugoslavia. West Berlin will also participate, share status as a nation.



Frontier Chemical Company

At the heart of Mid-America

THE INDUSTRY'S NEWEST CHEMICAL PLANT DOUBLES
ITS CAPACITY AND BROADENS ITS RANGE OF PRODUCTS

FR

NOW BECOMES A MAJOR PRODUCER OF

CHLORINE & CAUSTIC SODA

(FLAKE, SOLID & LIQUID)

plant capacity now *225 tons per day*
of each product

CHLORINATED SOLVENTS

(INCLUDING PERCHLORETHYLENE
IN EARLY 1957)

Carbon tetrachloride
Methylene chloride
Grain fumigants
Chloroform

in drums or bulk via Frontier's own
tank trucks or tank cars

BENZENE HEXACHLORIDE

14% and 36% gamma isomer, technical
grade; also dust concentrates and wet-
table powders

MURIATIC ACID

in tank car and tank truck lots



Frontier Chemical Company

DIVISION OF UNION CHEMICAL & MATERIALS CORP.

EXECUTIVE OFFICES: Municipal Airport, Wichita, Kansas

PLANTS: Wichita, Kansas • Denver City, Texas • Dumas, Texas (HCl)

ENLARGED

FRONTIER

CHEMICAL

PLANT

AT WICHITA

KANSAS

ONTIER



EXCELLENT SERVICE to more users is the object of Frontier expansion. Storage and shipping facilities are now more than ample to provide fast shipment from large stocks on hand. For example, the four large tanks at extreme left can each hold 250,000 gallons (about 3,000,000 pounds) of chlorinated solvents. The 360' x 80' warehouse (center) can store 3,000 tons of packaged products. Enlarged loading racks now speed shipment of bulk products in Frontier's own tank car and tank truck fleets. Back of this greater capacity to serve stands enlarged and highly developed production and quality control equipment. Frontier's new chlorinated solvents plant (at left in picture), with a capacity of more than 20,000,000 pounds of chlorinated hydrocarbons per year, is the most advanced installation of its class in the chemical industry.

*the Frontier spirit is
friendly . . . and it's backed
by unique abilities
to serve Mid-America well*



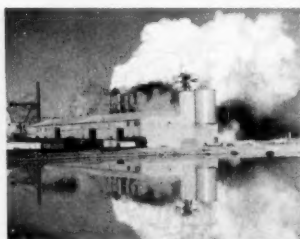
FRONTIER SALES REPRESENTATIVES
SERVE THE AREA SHOWN IN BLUE



The strategic location of the Frontier Wichita plant near the geographical center of the nation offers unique advantages to users throughout Mid-America. Shipments move fast over uncongested routes in Frontier's own fleet of hundreds of tank cars, or direct to off-rail locations in Frontier's swift highway tank trucks. Frontier's expanding range of products affords thrifty, speedy carload or truck-load mixed shipments.

We'll be glad to welcome you as our next-door neighbor

We cordially invite manufacturers or processors using Frontier products in volume to consider locating their own new plants next door to ours. Among the advantages are free over-the-fence deliveries; unlimited supplies of low-cost electricity, natural gas and good water; high-type labor; favorable governmental environment; excellent transportation; and a strategic location. Sites of any desired size are available, with ample room for growth. Please call on us if we can help you in your planning.



Frontier service from Denver City, Texas

To the more southerly users of chlorine, caustic soda, muriatic acid, and high-purity, fine grain or briquette salt, our Denver City plant offers friendly Frontier service . . . and fast, dependable deliveries via Frontier's own tank car and tank truck fleet.



FRONTIER CHEMICAL COMPANY, Municipal Airport, Wichita, Kansas

We ☐ use _____ ☐ tons of _____ per month at _____
☐ sell _____ ☐ drums (LOCATIONS)

Please quote prices and deliveries.

INDIVIDUAL'S NAME AND POSITION _____

ORGANIZATION _____

ADDRESS _____

RESEARCH



Paid trips abroad



Cash awards



Free education



Lures for the wife

Creativity Inducements: More to Come?

Incentive plans—common in production and sales departments—don't yet enjoy the same popularity in research. But such systems are now getting plenty of attention from chemical companies (especially the smaller ones) that (1) find it progressively tougher to get and keep truly creative lab men; (2) hope to increase the latter's idea output. In evidence of this trend, a Midwestern firm, this

week, is considering free trips (to Bermuda, etc.) for its best researchers and their families. The plan has worked in sales and the firm thinks it will inspire wives to spur their researcher husbands to greater efforts.

The Right Atmosphere: Dimming hopes for the "Bermuda plan" is the fact that chemical management is finding it a lot more difficult to apply incentive plans to researchers than to

their industrial colleagues. The problem is difficult, because it's hard, often impossible, to fairly evaluate individual achievement in an environment of team research.

And such plans may boomerang, promote reduced, rather than increased, idea production.

E. M. Fettes, manager of Thiokol Chemical Corp.'s (Trenton, N.J.) research and development department,

'It's a lot harder to apply incentive plans to researchers ...'



M. W. KELLOGG'S SKELLY (left); THIOKOL'S FETTES: In environment, two links to creativity.

points out that if a company offers sizable lump-sum awards, its researchers may hoard their ideas, keep them secret, try to build them up on their own. Fettes' idea: "A good research man will always be creative. What he wants is more freedom to think, unrestricted by overly close supervision. Give him this and you'll get more good ideas."

Thiokol admits it has given thought to a program to reward good ideas but hasn't found anything workable yet. Thiokol pays its researchers \$25 on a patent application, another \$25 when the patent is granted. But, says Fettes, "this is not so much an incentive for ideas as it is an incentive for men to keep their notebooks in order to help our patent attorneys."

General Electric's (Pittsfield, Mass.) chemical development department manager, A. E. Schubert, goes along with better salaries rather than special awards or bonus plans. Schubert thinks incentive plans are "easily exposed to faulty administration, are of questionable value in providing incentive for the creative worker."

He feels that continuity of incentives (rather than spot awards) is of critical importance in encouraging top performance by creative workers. Schubert points to GE's recently stepped-up

salary scale as a reason for reduced turnover of "highly capable" research chemists at his company.

Many Means: But some small firms aren't able to report the same experience with across the board raises, are trying other devices. One company has been awarding \$500 to men who come up with unexpectedly valuable patents. But the research director concedes that some staffers work hard on patents that are taken for protective reasons, have little commercial value. In such cases, the individual is awarded a promotion and raise in salary.

Incentive plans now in force take many forms. Seemingly successful are awards in the form of education subsidies; award dinners (when the emphasis is on professional recognition); and stock options.

Not successful: a pool of patent royalties, which had to be abandoned because participants couldn't agree on their proper share.

Some research executives are drawing their inspiration from outside the industry, point out that aircraft research, for example, is further along with incentives than the research in chemical process industries.

And there may be some truth in this contention. H. A. Campbell, chief of Bell Aircraft Corp.'s (Buffalo, N.Y.)

general engineering laboratories, reports success with a plan that:

- Gives a "modest" bonus for all patents. In addition, on patents that turn out to be suitable for licensing, applicants receive 25% of royalties for the life of the license.

- Provides expense-paid schooling. For really outstanding research achievements (maybe two men a year merit this), Bell provides one year leave of absence to attend graduate school with all expenses (including those of his family) plus full salary paid.

In the chemical industry, National Research Corp. (Boston) features a liberal plan that provides:

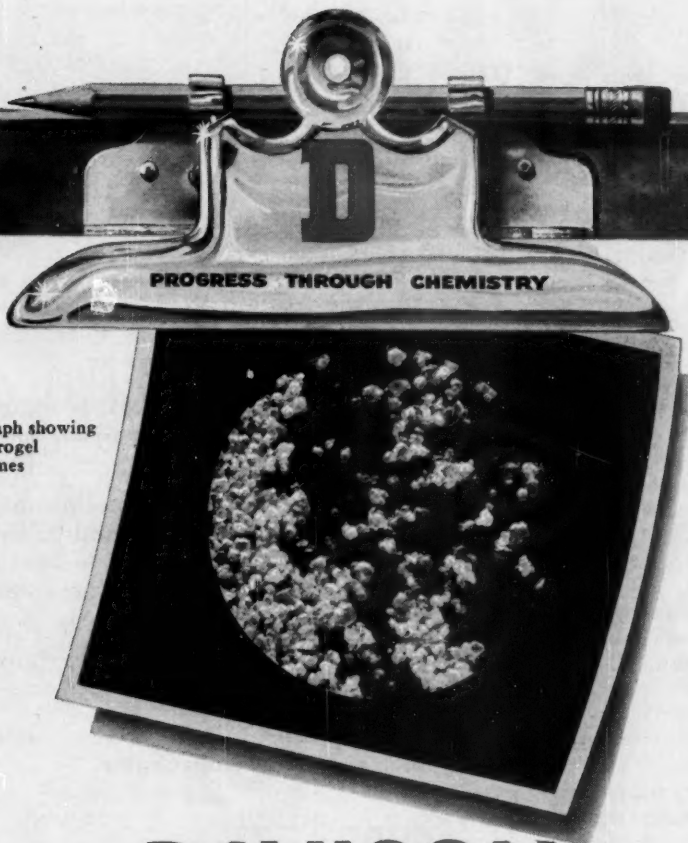
- Stock options for key technical people (about 8-10% of the staff is eligible), gives a \$25 bonus for patents granted.

- A profit-sharing plan for all employees, including researchers.

- And a unique arrangement whereby good men are eligible for promotion in companies formed through NRC research efforts. This includes lower-level researchers (who can become shift supervisors or quality control heads) as well as research director candidates.

Related to Size? Among the biggest companies, formal incentive plans are

Microphotograph showing
Davison's Hydrogel
enlarged 20 times
actual size.



DAVISON

...partner in product development

Davison Engineers have a long record of working with manufacturers in the development of new products as well as solving problems on products currently in production.

One such case is the use of Davison's Code 91 Hydrogel for imparting porosity in rubber products. This application required a product of high purity with a narrow total volatile control. The particle size had to be of definite consistency and a close control of the pH range was required. Davison Engineers worked on the problem with the manufacturer and developed Code 91 Hydrogel which is being used successfully and economically to meet the rigid specifications.

This is only one of the many cases in which Davison Engineers have been able to help a manufacturer solve a problem.

See your Davison Field Service Engineer today and discuss your manufacturing problem with him. Let the Davison Engineer be your partner in product development.

DAVISON CHEMICAL COMPANY

Division of W. R. Grace & Co.

Baltimore 3, Maryland



Sales Offices: Baltimore, Md.; Chicago, Ill.; Columbus, Ohio;
Houston, Texas; New York, N. Y.

Producers of: Catalysts, Inorganic Acids, Superphosphates, Triple Superphosphates,
Phosphate Rock, Silica Gels and Silicofluorides. Sole producers of DAVCO® Granulated Fertilizer.

RESEARCH

rare; researchers are given merit raises instead. That's the story at Celanese, Carbide and Carbon Chemicals Co., Allied Chemical & Dye Corp.'s National Aniline Division, Monsanto (which does give a token \$5/patent), Dow, and Metal & Thermit Corp. (New York).

Significantly, team research is entrenched most firmly in the larger companies, makes the task of rewarding individuals more difficult. American Viscose reports it has no bonus plan for anyone—research or otherwise. Other bonus plan dissenters include Houdry Process Corp. ("We are convinced no single type of incentive plan gets the most out of all people"); Merck's Sharp & Dohme Division; Atlantic Refining; and Smith, Kline & French.

Du Pont is a notable exception. It rewards research through two bonus plans. Its "A" bonus plan split \$638,020 among 211 employees (many of them researchers) in 1955, while its "B" bonus went to 8,697 employees.

Du Pont's "A" bonus is based on profits on sales resulting from a single achievement (e.g., Wallace Carothers' pioneering of nylon). Its "B" bonus is for contributions that are more difficult to assess.

Balancing Up: Considering the wide differences of opinion, it's not likely the industry's bonus schism will be resolved soon. The big goal continues to be how to keep researchers operating at top capacity. Joseph Skelly, M. W. Kellogg (New York) division manager, whose personal opinion is shaped by a long-time interest in the matter (*CW*, Jan. 21, p. 22), would like to see more research projects shifted from a horizontal basis (where they pass from lab to lab through many hands) to a vertical basis (where one team sees the project through from start to finish). This way it should be easier to fix credit for success.

Skelly thinks industrial research, like other types of exploration, should be motivated by potentially big compensation. While he does not write off the effect of environmental factors, he believes that bigger rewards would up scientific output.

It's his philosophy—a not uncommon one—that "fame and fortune should come to men who solve the big research problems, while sharp and painful consequences should befall those who fail."

What Happened . . .

. . . to the pollution research and technical aid program for fiscal '57 blueprinted by the U.S. Public Health Service?

USPHS Asked for

\$1,370,000

- Grants, contracts to universities and institutions. Intensified research program at University of Cincinnati's Sanitary Engineering Center. **\$1,000,000**
- Nationwide collection of basic pollution data (includes chemical, physical, biological facts). **\$250,000**
- Stepped up hiring of pollution experts to look into unusual and difficult pollution problems. (This is to beef up PHS's present two-man task force working out of Cincinnati on these problems.) **\$120,000**

USPHS Will Get

\$300,000

- Most of this will go to University of Cincinnati's Sanitary Engineering Center.

It Means That . . .

U.S. Pollution Research Goes on Ice

The U.S. Public Health Service isn't getting far with the \$1.37-million research and technical aid program it drafted in response to the federal pollution control act of July (*CW*, July 7, p. 21). Last week, Congress trimmed PHS's funds request, left only about \$300,000 for research. While PHS can make a modest start on its research plans, much of the program will have to mark time until next year.

Then, PHS will again try to get the money it wants*, enough to launch a \$2-\$3-million research program.

Most of the \$300,000 available this year is tagged for support of a varied research program at the University of Cincinnati's sanitary engineering center.

Two projects at this institution rate high on the priority list:

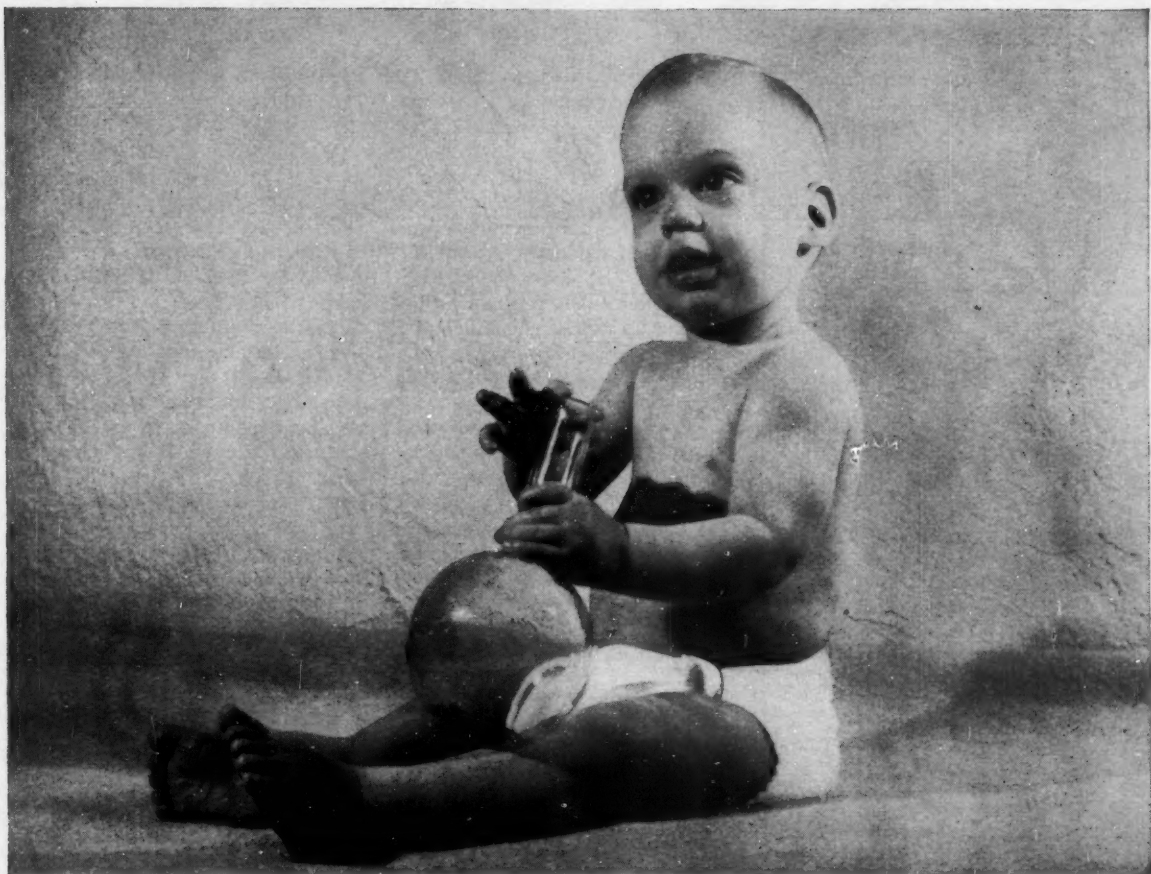
- Evaluation of Dow Chemical's oxidation towers. These relatively

*This year, although the program was authorized, Congress did not appropriate all of the money requested. PHS feels this was because there was too little time for full hearings on spending requests. Next year, with adequate time to present its case, PHS may get the necessary funds.

small units treat industrial wastes by a percolation process, are said to be more economical to operate than huge trickling filters used elsewhere. (A device related to the Dow equipment is already being tested for raw-sewage treatment in Battle Creek, Mich.)

- Evaluation of anaerobic reduction processes. These techniques are reported to be more adaptable to strong and septic wastes than is the oxidation tower. But they share the oxidation tower's promise of reducing waste-treatment costs. Compared with conventional waste-treating equipment, both approaches are expected to save on construction materials, eliminate mechanical equipment, occupy less land area, reduce operating costs. Anaerobic reduction intrigues pollution researchers, because it represents a sharp departure from the theory that wastes break down only in the presence of oxygen.

Looking ahead to the time when funds become available, PHS is planning grants and contracts to universi-



How to Keep Your Production Chemist Young

That top-flight production chemist of yours may often wish he *were* enjoying his cradle days again—particularly when he's being haunted by production troubles due to variations in chemical materials quality.

Fortunately, there's one *sure* way to help him avoid these hair-graying experiences: *Buy proven, first quality materials.* When you specify uniform, high purity *Pittsburgh* Phthalic Anhydride, for example, you enjoy these positive benefits:

1. Production problems due to inconsistent phthalic quality are eliminated.
2. Expensive down time is minimized.

3. Far less quality control is required, freeing your chemist's time for other important work.
4. Customer complaints are reduced, costly adjustments and service calls are cut to the bone.
5. Better product quality stimulates sales; reduced production costs increase your profits.

And to this list you can add Pittsburgh's reputation for fast reliable deliveries and the complete facilities of its technical service department. *Ask your Pittsburgh man for proof of these benefits. He has the complete story.*

Pittsburgh Industrial Chemicals

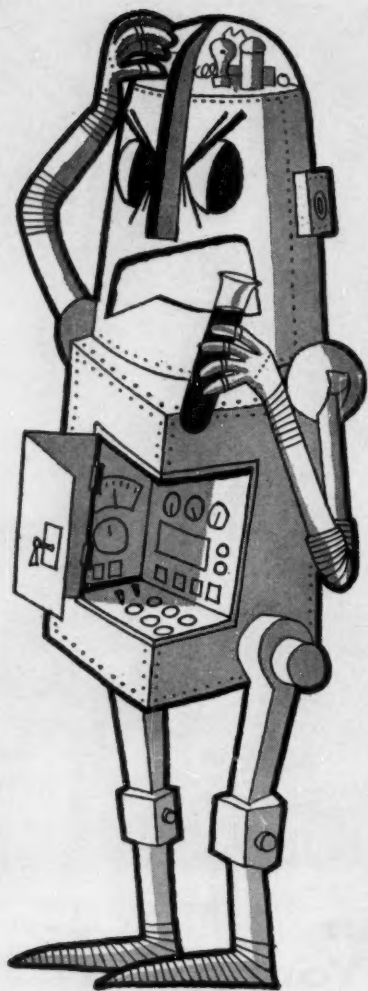
Plasticizers
Phthalic Anhydride
Maleic Anhydride
Fumaric Acid
Phenol
Ortho Cresol
Meta Para Cresol

Benzene
Toluene, Xylene
Pyridine
Alpha Picoline
Beta Gamma Picoline
Sulphuric Acid
Ammonium Sulphate



WSW 6200A

COAL CHEMICALS • PROTECTIVE COATINGS • PLASTICIZERS • ACTIVATED CARBON • COKE • CEMENT • PIG IRON



Cure for Waste "Indigestion" ... Jacques Wolf Enzymes

Jacques Wolf specific action enzymes insure rapid and complete liquefaction of waste materials. They get right to work and stay on the job until wastes are liquefied and drained off. Yes, Jacques Wolf enzymes actually "digest" wastes and flow them away!

Ideal for septic tanks, cesspools and sewers, they're highly concentrated to do a better, more effective job in less time.

Samples for testing are available; contact us today.

JACQUES WOLF & CO.
Chemicals PASSAIC, N.J.

Plants in: Clifton, N.J., Carlstadt, N.J., Los Angeles, Calif.

RESEARCH

ties and other institutions. These will get the bulk of the money, may in time attract additional private funds. PHS hopes to foster permanent basic and applied research independent of federal aid.

To collect basic pollution and health-related chemical, physical, biological data, PHS is considering:

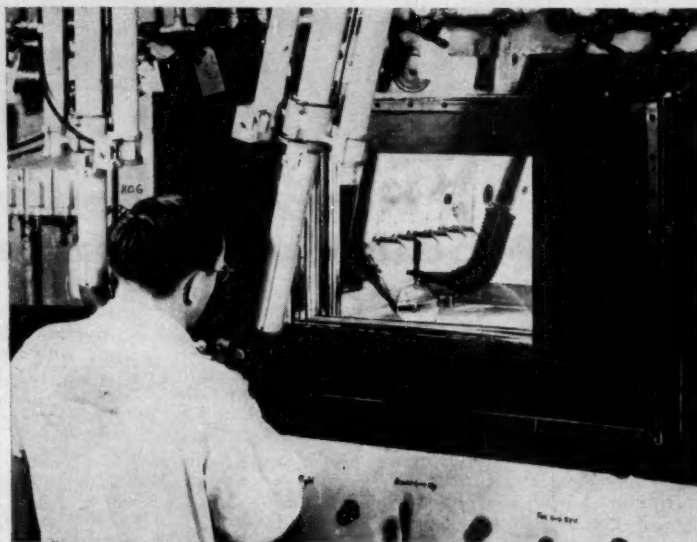
- A national data program relating water quality to sewage and industrial waste pollution. This will complement the U.S. Geological Survey's data on natural chemical content of water.
- A complete national inventory of sources and types of pollution and of water sewage and industrial waste facilities.
- A detailed basic data program on the economics of water supply and pollution control.

Solving the Tough Ones: PHS also plans to step up its handling of mounting calls from industry and govern-

ment agencies for expert personnel to look into unusual and difficult pollution problems. The agency would like to train 25 engineers and biologists, add these to its Cincinnati staff. Problems ticketed for special attention include petroleum refinery waste disposal at Baton Rouge, La., and a survey of radioactive wastes discharged into the Savannah River.

Results of this program won't be quickly forthcoming. But when the plan does go into effect, it should prove helpful to the chemical and pulp and paper industries.

Chemical makers currently spend some \$25-40-million/year to treat their plant wastes; pulp and paper mills spend \$7.5 million/year. More economical methods to treat increasingly complex industrial wastes are needed to cut already-burdensome expenditures for industrial pollution control.



Good Outlook for Cesium-137

OPERATOR of remote-control handling device completes fabrication of a 2,000-curie cesium-137 source—the largest yet—at Tennessee's Oak Ridge National Laboratory. Union Carbide Nuclear Co., which operates the laboratory, foresees a need for millions of curies of cesium-137 in catalysis of chemical processes, food and drug

pasteurization, etc. Now under construction: a pilot plant that will be capable of separating (reactor waste fission products) and packaging 200,000 curies/year of the isotope. Scheduled to be ready next June, this unit will probably cut the isotope's present \$14/curie price (exclusive of fabrication and special handling charges).



ATLAS

chem-memos

CHEMICALS DIVISION

ATLAS POWDER COMPANY, WILMINGTON 99, DELAWARE

Atlas Powder Company, Canada, Ltd., Brantford, Ontario, Canada



Two emulsifiers usually work better than one

Whenever you're making an emulsion for sale—a dispersion of oils or waxes and water which must remain stable through your customers' usage . . . you can usually get best results (and easier emulsification) by using a blend of oil-soluble and water-soluble emulsifiers.

Here are a few hints that will save you time in choosing and using emulsifiers in blends.

For O/W emulsions, the blend you use should be predominantly water-soluble. Ordinarily, you'd think of using one of the "high HLB" emulsifiers by itself—like one of the TWEEN® or MYRJ® emulsifiers made by Atlas. By adding a small amount of an oil-soluble emulsifier, with low HLB value, you usually find that the finished emulsion is more stable and often can be made thicker in consistency.

For W/O emulsions, the story goes just the opposite way. An oil-soluble emulsifier with low HLB value, like one of the Atlas SPAN® or ARLACEL® products, could do the job by itself. But by adding

a relatively small amount of the opposite kind of emulsifier, such as a TWEEN product, you can get water dispersed in the oil phase much easier . . . often without any milling or homogenization.

To make the blending job easier for you, Atlas produces emulsifiers of the oil-soluble and water-soluble varieties in matched chemical groups. The SPAN and ARLACEL series of sorbitan esters of fatty acids, for example, have their counterparts and co-emulsifiers in the TWEEN series of polyoxyethylene sorbitan derivatives of fatty acids. The SPAN and ARLACEL products blend nicely with the MYRJ polyoxyethylene stearates, too.

Beside speeding your formulation, you can also put a sizeable dent in your inventory needs by using Atlas emulsifier blends. A few "standard" Atlas types, chosen for the kind of work you do, can often take the place of a warehouseful of "specialty" emulsifiers. We'll be glad to send you full technical data, samples for test, and recommendations on your specific formulas.

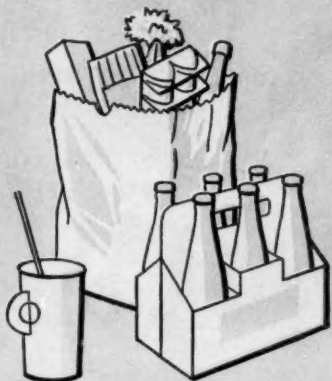


NOW... paints from polyesters?

There's a good possibility that paint manufacturers may soon be incorporating *polyester resins* into their products—for better resistance to impact or to chemicals, for better adhesion to metals, or for other advantages. This is the type of resin used so successfully as the basis for glass-reinforced plastics.

As a result of paint industry interest in our ATLAS® 382 polyester resin, Atlas research has tried this resin in wood finishes, chemical resistant finishes and wrinkle finishes. We now have a report on the apparent compatibility of Atlas 382 with various common paint ingredients.

Atlas 382 is an unsaturated, di-basic acid ester of an alkylene oxide condensate of a bis-phenol. If you'd like to try it in experimental paint formulas, we'll be glad to send you our report and a sample for testing.



Atlas emulsifiers used with revolutionary new paper size

Among recent outstanding chemical developments for the paper industry is Hercules Powder Company's "Aquapel," an entirely new kind of sizing agent. While ordinary size usually controls liquid penetration into paper by forming a coating on the fibers, "Aquapel" actually reacts with the cellulose to become an integral part of the paper. It forms a surface that is resistant to penetration of many acids and alkalis, as well as hot or cold water.

Atlas emulsifier specialists, working closely with Hercules, came up with

emulsifiers especially well suited for dispersing "Aquapel" (an alkylketene dimer) in water for application to paper. Some types of "Aquapel" are self-emulsifying, being made to include a special Atlas emulsifier. Other grades of "Aquapel" are non-self-emulsifying, and Hercules usually recommends Atlas G-1096 (a sorbitol derivative) for use in conjunction with these grades.

When you're working with emulsions, it pays to work with Atlas. As a starter, ask us for our "Organic Chemicals Catalog," which includes over 90 Atlas surfactants.

*Aquapel®—Reg. U.S. Pat. Off., Hercules Powder Co.

Sodium Tripolyphosphate

Tetrasodium Pyrophosphate

ANHYDROUS

Sodium Polyphos

(SODIUM HEXAMETAPHOSPHATE)
(SODIUM TETRAPHOSPHATE)

Trisodium Phosphate

CRYSTALLINE
MONOHYDRATE

Sodium Phosphates

BLOCKSON

**Trisodium Phosphate
Chlorinated**

Disodium Phosphate

ANHYDROUS
CRYSTALLINE

Monosodium Phosphate

ANHYDROUS
MONOHYDRATE

Sodium Acid Pyrophosphate

also major producers of:

SULFURIC ACID
SODIUM FLUORIDE
SODIUM SILICOFLUORIDE
HYDROFLUORIC ACID
HYGRADE FERTILIZER
NONIONIC SURFACTANT—
TEOX® 120

BLOCKSON CHEMICAL COMPANY

Division of Olin Mathieson Chemical Corporation
JOLIET, ILLINOIS

CHEMICAL WEEK
August 11, 1956

Put down an alkyl borane as the high-energy fuel that Olin Mathieson will make for the government at the Lake Ontario Ordnance Works (*CW Technology Newsletter*, Aug. 4). Not much has been published about alkyl boranes. But it is known that a mixture of these products results from the reaction of diborane and boron trialkyl. A "Ziegler catalyst" could probably be used in place of the boron trialkyl. Item: Rocky Mountain Research is making aluminum trimethyl, presumably for rocket applications.

Look for Sorel slag (*CW*, Oct. 11, '52, p. 39) to become a source of titanium metal. The material has caught on as a raw material for titanium pigments, and has long been touted as an attractive starting point for the metal.

Now two companies—Stauffer and N.J. Zinc—are fairly well along in the development. Stauffer recently decided to double titanium tetrachloride output at Niagara Falls (*CW*, Aug. 4, p. 38). And, although the company isn't talking about process details, it has adapted its fluid-bed tetrachloride process to Sorel slag.

The process that is believed to be the basis for Stauffer's operation is outlined in U.S. patent 2,486,212 granted to Arnold Belchetz.

N.J. Zinc is taking a different approach. It's backing a moving-bed process, has pushed it along into a large pilot plant. In this patented (U.S. 2,723,903) version, the titanium-containing material (e.g., Sorel slag) is briquetted and charged to the top of the chlorinating zone. As it becomes depleted in titanium content, it moves down the zone to the bottom, where it's discharged. Chlorination is carried out continuously.

Both Stauffer and N.J. Zinc are interested in making the tetrachloride for National Distillers' proposed titanium metal plant. No contracts have yet been signed. But this potential source of demand is undoubtedly a contributing factor in Stauffer's decision to expand.

Stauffer, by the way, is almost certain to make zirconium tetrachloride for National Distillers' venture in zirconium metal. No contracts have yet been signed on that, either. Nor is either firm talking about it. But negotiations between the two are at an advanced stage.

In another area of titanium processing, Horizons Inc. has just received a contract from the Navy Bureau of Aeronautics to develop its electrolytic method of making the metal. The process—operating on a laboratory scale—is described as a modification of the firm's earlier fused-salt electrolysis. It has been under investigation by Horizons for two years.

The contract with the Navy is for \$200,000, covers one year. Should the process prove out, it will be commercialized by Horizons Titanium Corp. (New York), a licensee of the parent firm.

Technology

Newsletter

(Continued)

The state of Oregon is now considering a plan to dispose of pulp mill wastes by flowing them through central Oregon lava faults into seemingly limitless underground caverns and lakes. Oregon state engineer Lewis A. Stanley (Salem) reports the study was prompted by an inquiry from E. A. Messer & Assoc., Portland consulting engineers. The latter was interested in leasing a long-abandoned irrigation reservoir that could not hold water because of such faults.

Stanley points out that the cities of Bend and Redmond, Ore., dump sewage into such caverns without polluting the nearby Deschutes River.

•

Already drawing fire is AEC's approval last week of a fast-breeder reactor construction permit. The group sponsoring the proposed reactor—a \$40.5-million, 100,000-kw. job—is the Power Reactor Development Corp.—an aggregation of 26 industrial firms headed by Walter Cisler, president of Detroit Edison Corp. (Detroit Edison will distribute the electricity).

Behind the controversy: It was a fast breeder that got out of control at the Arco, Idaho, station last fall. There's legitimate concern now that this might occur in a large-scale reactor, with disastrous consequences.

This is AEC's position: The development of the fast reactor is a potentially rewarding field of study. AEC sees no reason why a thorough study of the safety aspects of the reactor can't be completed in a "reasonable amount of time." And it emphasizes that the plant won't be allowed to operate until all safety questions are adequately answered.

The plan's opponents think AEC may be setting a dangerous precedent by giving such approval—even conditional approval. They feel that once the plant is built the commission may feel compelled to grant final approval. Opponents of the move include Sen. Clinton Anderson (D., N.M.), chairman of the Joint Congressional Atomic Energy Committee, and Atomic Energy Commissioner Thomas Murray.

•

Du Pont will spend over \$4 million this year to promote safety. Goal: an accident-free year for all 100,000 employees (including those in government-owned plants operated by the company). Last year, 77 of the company's people had accidents. The \$4 million, Du Pont emphasizes, is only for direct costs (safety prizes, supervision, equipments, etc.). Indirect costs, it estimates, may be 10-15 times that.

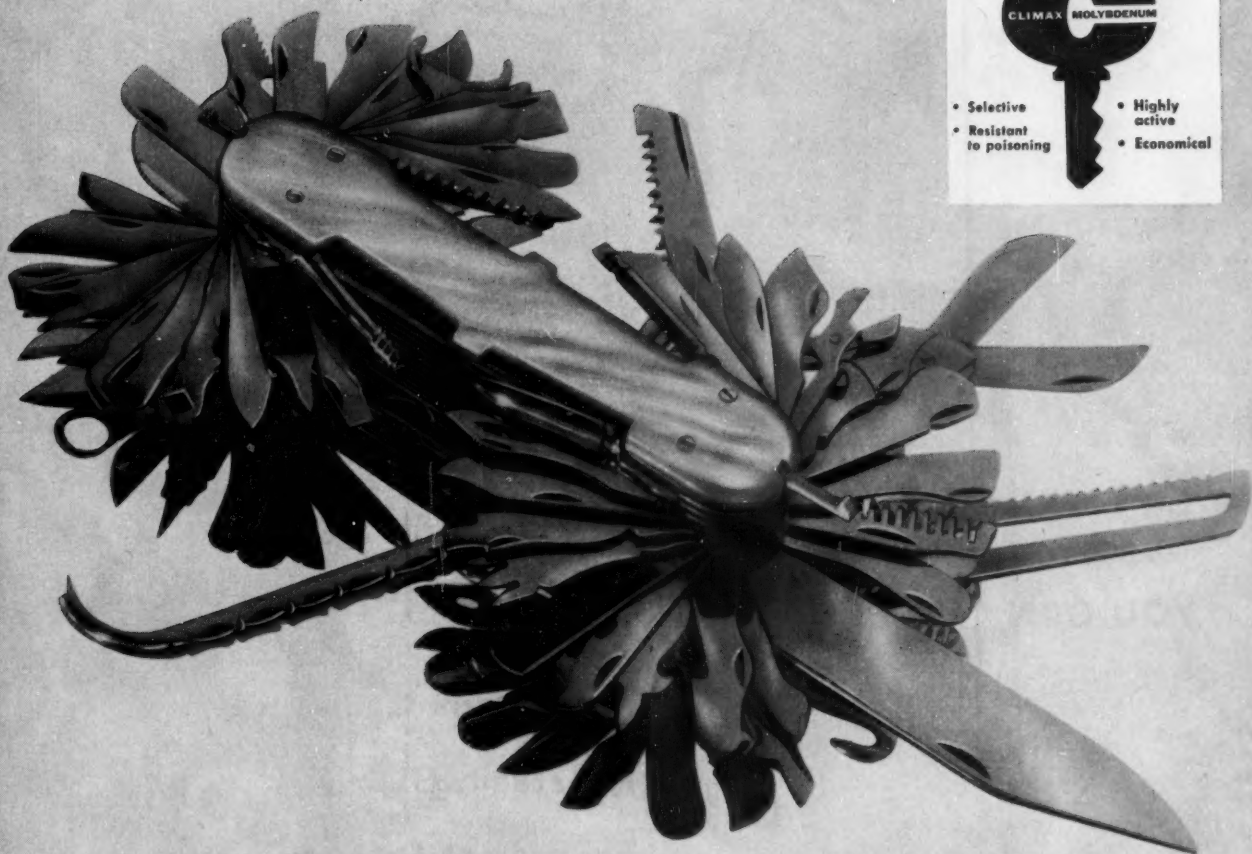
•

Canadian investigations indicate that food colors Orange I, Orange SS and Oil Red XO are harmful to animals. As a result, they will no longer be used in foods. Present stocks of fish or fruit containing the colors may be sold until Oct. 1 of this year. For other foods, the deadline is Aug. 1, '57.

Use the moly key
...to better catalysts



- Selective
- Resistant to poisoning
- Highly active
- Economical



Moly catalysts are versatile



Because of its versatility, molybdenum is one of the most widely used catalytic elements. As a transition element, it has the incomplete inner shell of electrons needed for catalytic activity. Ease of transition from one to another of its six valence states allows it to function readily as an electron acceptor or donor. It forms a variety of compounds in all valence states, most of them resistant to common catalytic poisons. Commercially, molybdenum catalysts are used in seven types of reactions: oxidation, hydrogenation, dehydrogenation, isomerization, cyclization, chlorination and condensation. Promising results have been obtained in dehydration, polymerization and alkylation. For complete data write Department 28, Climax Molybdenum Company, 500 Fifth Ave., New York 36, N. Y. for our bulletin, "Molybdenum Catalysts for Industrial Applications."

CLIMAX MOLYBDENUM

true as

YOU CAN DEPEND ON PUBLICKER

For uniform Quality

For steady Supply

For prompt Delivery

Ethyl Alcohol

Ethyl Acetate

Butyl Alcohol

Amyl Acetate

Butyl Acetate

Acetone

Acetaldehyde

Acetic Acid

Butadiene

Refined Fusel Oil



a  plumb...



PUBLICKER INDUSTRIES Inc.

1429 WALNUT STREET, PHILADELPHIA 2, PA.

NEW YORK • NEW ENGLAND • MIDWESTERN DISTRIBUTORS, PUBLICKER ALCOHOL & CHEMICAL SALES CORP.

**PHILADELPHIA — LOCUST 4-1400 • NEW YORK — OXFORD 5-4160 • BOSTON — HOMESTEAD 9-0022
CHICAGO — RANDOLPH 6-6678 • CLEVELAND — CHERRY 1-6140**

SPECIALTIES

CHEMICAL SPECIALTIES IN CAN MANUFACTURE

Application	Types of Commodities Concerned	Estimated Number Containers per year Affected
Interior Coatings "C" enamels, oleo-resinous or phenolic enamels fortified with 15% zinc oxide pastes	Foods containing sulfhydryl groups—corn, peas	12-15 billion
2-phase, epoxy and vinyl-copolymer coatings	Beer, soft drinks, synthetic detergents	7-8 billion
Fatty acid amide, additive in phenolic enamels	Meats and pet foods	1 billion
Side-Seam Cements largely polyamides	Synthetic detergents, frozen orange juice, motor oil	5 billion
Finishing Enamels melamine or urea-formaldehyde	Lithographed containers for all sorts of products	15 billion

Incentive for Development: 40 Billion Cans

Chemical specialties—mainly coatings and adhesives—figure into the manufacture of nearly 40 billion cans yearly.

This tots up to nearly 10 million gal. of coatings for can linings, about 700,000 lbs. of adhesives.

And advances in lining, cementing and lithographing, moreover, are opening new markets for cans and can chemicals.

TAKE a look at a couple of items of recent industrial news:

- A new type of lining for canned-meat containers, a phenolic modified with fatty acid amides, is now being introduced by American Can. Co. Its purpose: to make canned meats slide out of the container easily.

- Heavy-duty liquid synthetic detergents, almost all packed in metal containers, are now the fastest-growing specialty in the wash-product field.

The first item demonstrates the importance of specialty coatings to the metal container industry; the second drives home the value of metal containers to the specialty business. It

plainly shows the interdependence of these two unrelated fields—a relationship that has proved beneficial to both. This mutual gain has been particularly noticeable within the past 3-4 years, and it should become even more pronounced.

Heap of cans: Last year, can manufacturers turned out an estimated 39-40 billion cans. About three-quarters of these are lined with one coating or another—from simple oleoresinous "sanitary" enamels* to the far more expensive, two-part linings typical of beer cans—so that about 10 million gal. of specialty coatings are consumed yearly. One can maker estimates that

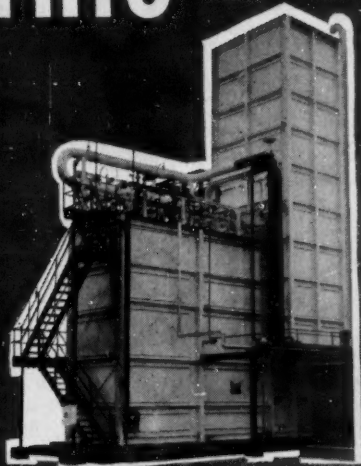
some 1,800 firms have a hand in supplying these materials.

In addition, recent techniques of can fabrication employ special cements, in place of solder, to close can seams. Containers so constructed are common for packing motor oil, frozen orange juice, insecticides and liquid detergents. Polyamides are the key resins in most of these cements, but some based on natural resins or animal glues have been used. Although this phase of container manufacture is just whipping into stride, the industry already utilizes nearly 700,000 lbs./year of these cements. And when heat-sterilized products are put up in cemented cans, the volume will greatly rise.

Lots to Learn: Increased utilization of chemical materials is permitting the can-making industry to adapt its products to a variety of new items. In some cases, the sturdy sheet metal has become—to a large extent—merely a

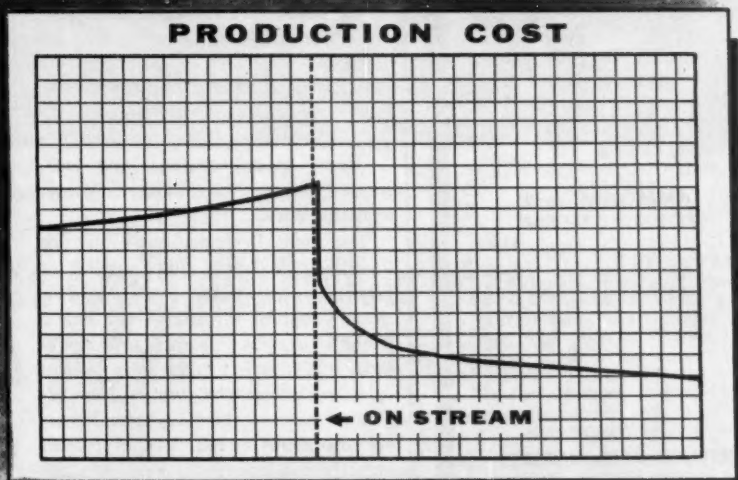
*The "sanitary" coatings have been greatly modified and improved since their introduction, by the addition of such things as phenolic alkyl and maleic-modified rosin esters.

When THIS



goes on stream

THIS goes down



Do you use oxygen and/or nitrogen on a large scale? Or are you contemplating expansion involving the use of oxygen? If so, we can easily prove that an Air Products "On-Location" Oxygen and/or

Nitrogen station will reduce your costs —substantially.

The specialized experience of Air Products in the field of low-temperature gas

separation processes is unsurpassed in this country and abroad. This background can be effectively employed to assist in formulating your plans.

We design and manufacture:

Large Capacity Tonnage Generators for unlimited quantities of oxygen and nitrogen, regardless of size, purity, or cycle

or

"Packaged" High Purity Generators, producing high purity oxygen and nitrogen separately or simultaneously.

Let us study your requirements and make recommendations (with comparative costs) for an installation specially designed for your particular needs.

**More than 700
successful installations**

Air Products
INCORPORATED

Dept. J., Box 538, Allentown, Pa.

**Cost Analyses • Process Design
Apparatus Design
Apparatus Manufacture**

Have You An Odor Problem?

Excerpts from monthly news bulletin sent by RHODIA to its sales and engineering staffs.

AMMONIUM THIOGLYCOLATES

Recent developments abroad indicate that three ALAMASK products are excellent for reducing odor intensity and masking ammonium thioglycolates. Potential users can submit their products for evaluation and reodorization. After tests, recommended formulae will be submitted.

AMMONIA and FORMALDEHYDE

ALAMASK CNG and ALAMASK CNG-X have been reported to us as excellent masking agents for odors traceable to ammonia and formaldehyde. ALAMASK CNG-X will give clear solutions in dilute aqueous ammonia and is generally employed at concentrations of 0.5% to 3%, depending upon the masking requirements.

REFUSE AND WASTES

ALAMASK CNG has also been recommended for use in controlling malodor from refuse dumps and animal wastes. This product imparts a fresh clean fragrance.

These are but a few of the instances where ALAMASK is being used to combat obnoxious malodors, whether they be from processing operations or in end product. Our technical staff is available to work with you on your odor problems.

Rhodia INC.

60 East 56th Street, New York 22, N.Y.

In Canada: Naugatuck Chemicals
Division of Dominion Rubber Co., Ltd.
Montreal Toronto Elmira Winnipeg

SPECIALTIES

strong supporting medium for an envelope of product-resistant plastic film.

But, any firm that wants to avail itself of the durability, light weight and other desirable features of metal cans will do well to go along with the can maker in working out the formulation of the product to go into the can—again, a case of interdependence. The point is well illustrated in the case of synthetic detergent cans.

The first of the liquid synthetics to appear in a can was Lever's Lux. Liquids had already chalked up a phenomenal sales-growth record at the time of Lever's move, but soon after, the pace became even swifter. Along with growth came a substantial swing to the metal container as a syndet package; all three of the leading brands—Lux, Joy, Glim—are now offered in metal. Can production for this market is now 600-700 million/year.

In pioneering a canned syndet, Lever showed a willingness to take the can into account. Its formulation work was aimed at two goals: the desired syndet properties and "packageability." Its container makes use of about as many special coatings and techniques as any standard container available does.

The typical syndet can's interior lining—applied over either tinplate or blackplate—is a two-part coating. Base coat—about $\frac{1}{10}$ mil thick—is a baked phenolic or epoxy enamel, rolled onto sheet before it is formed into the can cylinder (lithography, too, is done before the can is formed). A second coating, also about $\frac{1}{10}$ mil thick, is sprayed onto the can cylinders, or rolled onto the end discs. The latter generally is a vinyl acetate-chloride copolymer (it sometimes contains aluminum powder to prevent a "blush," which occurs when water and heat of 200 F are encountered). The side seam of the can is cemented with polyamide cement—about 10 milligrams/inch of seam.

The end discs are often coated on the outside, too, with an aluminum-pigmented enamel on the base, lithography on the top.** Over lithography on top and side goes a colorless finishing coat—generally based on melamine or urea-formaldehyde—which both protects and adds gloss.

**To provide a good adherent base for the lithography, sizing materials (alkyds, vinyl phenolics or epoxies) are used. Background coatings, colored, are then applied, serve as base for the lithography.

A gasketing material (Dewey and Almy is the largest supplier) must be put on the base and top to seal them to the can wall. This is isobutylene in solvent solution, or styrene-butadiene latex emulsion. Continental Can has recently introduced a Cushion Seal gasketing compound.

In the past year, industry has taken to a polyethylene-nozzled syndet can—the polyethylene no-drip spout is less affected by synthetic detergents than was the previously used aluminum nozzle with dripless lip.

With the advent of heavy-duty liquid detergents, containers have had to be somewhat modified. One of the new products, surprisingly, is packed in an unlined can. Another, of lower pH, presented real problems in linings—as did its light-duty counterpart—but it's now successfully packaged in cans.

In making these modifications, and those for such products as car-wash detergents, household ammonia and floor waxes, there have been other changes, largely in the base coating enamel.

As originally worked out, the base was a phenolic. But this has been replaced in recent months on some syndet cans with more expensive epoxy undercoats. Tougher, more resistant to detergent, more flexible, the epoxy has another advantage that has also given it a boost in beer-can manufacture—it won't scorch at high-speed soldering temperatures. (Beer cans, turned out at a 7-billion/year rate, employ epoxies because they permit fast fabrication without the risk of scorched side seams.

Plenty of Suppliers: Providing the coatings, which cost anywhere from \$1.50 to \$3 or more per gallon, are a vast number of firms, but the larger paint manufacturers have the lion's share of the business. Generally, the coatings are devised by the can makers, although paint makers suggest formulations, too. Few can makers actually make more than experimental runs of coatings—they prefer to buy made-to-specification material.

In an effort to get faster-baking (10-15 minutes is common time; formerly an hour was required for many coatings), more durable and flexible materials, can makers have tried many different products. Here are some of the currently used coating materials and their uses:

- **Oleoresins:** For packing fruits,

Neville Announces Nevastain A



A New Non-Staining Rubber Antioxidant with Superior Characteristics

Nevastain A is an excellent non-staining, non-discoloring antioxidant with very low volatility and good stability. Synthetic and natural rubber compounds using Nevastain A have superior physical characteristics over those containing competitive non-staining antioxidants. Among its virtues are that it does not retard vulcanization, does not have an accelerating effect and does not bloom uncured or cured stock when used in normal quantities. This new product is being produced on a plant scale and is readily avail-

able and attractively priced. Use the coupon below to write for Technical Service Report No. 45.

Neville Chemical Company, Pittsburgh 25, Pa.

Resins—Coumarone-Indene, Heat Reactive, Phenol Modified Coumarone-Indene, Petroleum, Alkylated Phenol • **Oils**—Shingle Stain, Neutral, Plasticizing, Rubber Reclaiming • **Solvents**—2-50 W Hi-Flash, Wire Enamel Thinners.

NEVILLE

Please send Technical Service Report No. 45.

NAME

TITLE

COMPANY

ADDRESS

CITY

STATE

Caustic

...from the salt of the earth

(and service that's out of this world)

Salt from our own wells is the beginning of Wyandotte Caustic Soda . . . and, with every grade, we exercise the strictest manufacturing control—from basic raw-material ingredients to finished product. ¶ And, we always have an eye peeled for improvement. We've installed new facilities for making our anhydrous grades—improving flowability, and other characteristics. We've developed special shipping methods, so customers needn't worry about iron pickup. ¶ And something else Wyandotte buyers enjoy: service. Some examples: We've laid out storage and handling systems, assisted with customers' safety programs, determined economic cost factors in 50% vs. 74% liquid grades . . . We offer technical help—both directly, and through our distributors . . . Strategically located storage depots permit quick delivery—by tank car or drum—to help solve inventory problems. ¶ We have a 60-page book telling the complete Wyandotte Caustic Soda story. Send for your copy today! Wyandotte Chemicals Corporation, Dept. CW, Wyandotte, Mich. Offices in principal cities.



Wyandotte CHEMICALS

SODA ASH • CAUSTIC SODA • BICARBONATE OF SODA • CHLORINE • MURIATIC ACID
CALCIUM CARBONATE • CALCIUM CHLORIDE • GLYCOLS • CHLORINATED SOLVENTS
SYNTHETIC DETERGENTS • OTHER ORGANIC AND INORGANIC CHEMICALS

SPECIALTIES

vegetables, industrial products such as motor oil; also as undercoats for beer and ale cans.

- **Phenolics:** Not softened by animal fats, they are used for meats and fish products. Industrially, they're used in cans for cosmetics, cleaners, dentifrices, medicinals, detergents, paints.

- **Vinyls:** For products sensitive to metals and to off-flavor development—beer, ale, soft drinks. Low heat resistance limits their use.

- **Waxes:** Now used for cap-sealed soft drink cans, they are applied after can assembly.

- **Epoxies:** Useful with corrosive products—detergents, latex paints.

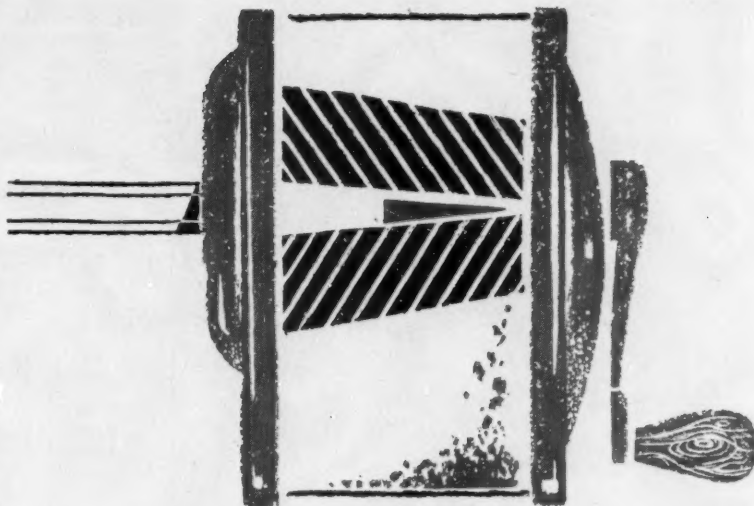


Bottles Get

THESE BEER BOTTLES, shown coming out of an abrasion tester, have undergone a new treatment designed to increase strength of glass containers. Called Duracote, the process was worked out by Owens-Illinois Glass Co., is now being applied to standard

New Products Ahead: In the research labs of the can makers—Continental just last month opened a \$7-million lab in Chicago—work proceeds toward several objectives: to find cheaper materials and those less “strategic” (there’s a major effort to get away from the use of tinplate); to package more items; to find better manufacturing techniques. Aluminum cans, for example are feasible, but expensive. Welding instead of soldering or cementing seams is promising, but slow.

No matter what the outcome of this research for new materials and methods, the market for can-making specialties will grow.



new product in the works?

Call on us

Hot on the trail of a new product? Looking for ways to improve an old one? If so . . . perhaps it's time you got in touch with us. For we, at Wyandotte, are equipped to serve you in many ways. ¶ For example, as an important producer in the chemical industry, we have a complete line of quality chemicals, and an exhaustive file of technical data on our many products . . . all available to help you find the answers you're seeking. ¶ Our research laboratories are among the most modern in the industry . . . and are staffed by experts. With our chemical background and technical “know how,” it is highly likely that your problems are not new to us. Perhaps we can come up with an answer right away. ¶ Why not let our years of chemical experience serve you? Write us,

today, giving full details on your chemical requirements. Wyandotte Chemicals Corp., Technical Inquiry Section, Wyandotte, Mich. Offices in principal cities.



HEADQUARTERS FOR ALKALIES



a Tough Skin

production containers as they come from the annealing lehrs. Described only as a “water-insoluble, organic polymer treatment,” the process reportedly is durable, nontoxic (has FDA o.k.) and permits easy labeling. O-I says it does not raise bottle prices.

See if these
features meet
your needs!

Armour Neo-Fat[®] 18

- 93% Stearic Acid Content
- Uniform Composition
- High Titer—65°C to 68°C
- Low Iodine Value
- Low Solubility
- Low Moisture Content
- Low Unsaturates
- Low Unsaponifiables
- Excellent Color Stability

MAIL THIS COUPON FOR FREE SAMPLE

PLEASE SEND ME:

- ☐ Sample of Neo-Fat 18.
- ☐ Catalog of the complete line of Fatty Acids and Fatty Acid Derivatives.
- ☐ New 48-Page Booklet—"The Chemistry of Fatty Acids."

NAME _____ TITLE _____

FIRM _____

ADDRESS _____

CITY _____ STATE _____

CW8

SPECIFICATIONS	Min.	Max.
Iodine Value.....	—	1.5
Acid Value.....	197	200
Saponification Value..	197	201
Titer °C.....	65	68
Color, Lovibond (5¼")	—	1.5R-10Y
Color Stability, Lovibond (5¼")..	—	3.5R-35Y
Unsaponifiable %...	—	0.5
Moisture %.....	—	0.2

AVERAGE COMPOSITION	
Palmitic Acid.....	5%
Stearic Acid.....	.93%
Oleic Acid.....	2%

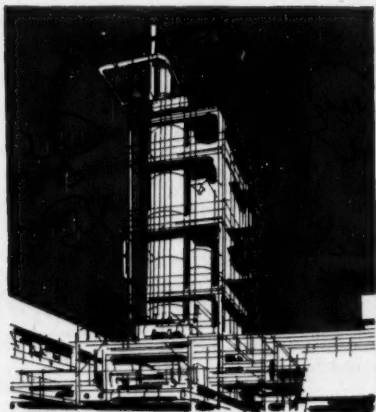
Available in flake or powdered form.
Carload and tankcar quantities.



ARMOUR CHEMICAL DIVISION

© Armour and Company, 1355 West 31st Street, Chicago 9, Illinois

• Fatty Acids • Fatty Acid Derivatives • Industrial Oils



Only Armour's 2-system Fractionation

can supply you with such
a complete line of
highest purity fatty acids
tailored for ester manufacturing.

Only Armour uses fractional distillation and solvent crystallization to produce a complete line of uniform Neo-Fat fatty acids offering single components in purities as high as 96%. *Yet you pay no premium in price.* Advantages such as these make Armour your *one* best source for all fatty acids. In the list below, you'll find the specific Armour Neo-Fats that will help you produce the finest esters at the lowest cost. Write us for samples and information.

● PRESSED STEARIC ACIDS

Neo-Fat® 18-54 Double Pressed
18-55 Triple Pressed

● SPECIALTY COCO ACIDS

Neo-Fat 8 Commercially Pure Caprylic
10 Commercially Pure Capric
12 Commercially Pure Lauric
14 Commercially Pure Myristic
265 Double Distilled Coco
Plus tailored blends of coco fractions

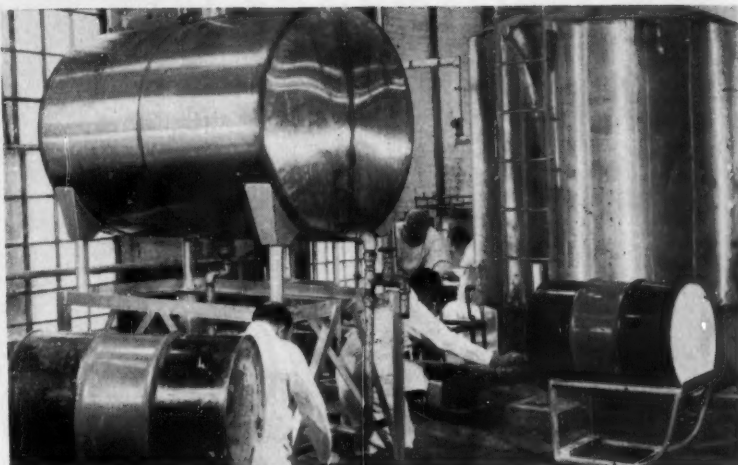
● SPECIALTY PALMITICS AND STEARIC ACID

Neo-Fat 16 Commercially Pure Palmitic
16-54 70% Palmitic
18 Commercially Pure Stearic
18-57 65% Stearic
18-58 70% Stearic
18-61 80% Stearic

● OLEIC ACIDS

Neo-Fat 92-04 Low Titer White Oleic
94-04 Low Titer Red Oil
94-10 High Titer Red Oil

SPECIALTIES



SUPPLYING: One floor above the filling line, formulations start for . . .



LOADING LINE, where the shoe polish is cold-filled.

Polish Primes for Big Push

A promotion campaign to begin within the next two weeks will launch Power-Matic Corp.'s (Scranton, Pa.) push for national distribution of Sprayola, its novel aerosol shoe polish.

Already, the push-button leather shining compound has built up sizable sales in the Pennsylvania areas where it has been test-sold for the past year and a half. Now, with the basic idea behind its polish patented (a method of making high-melting point waxes suitable for aerosol spraying), Power-Matic is ready to move into larger marketing areas.

Big advantages of the new polish, according to the firm, stem from pressure-packaging: the spray is con-

venient and not messy, and, because of the sealed can, there's no loss of polish ingredients (solvents) by evaporation. The formulation, the company says, is unlike any other liquid shoe treatment; no water or lacquer ingredients are utilized.

The polish is being sold through shoe, department and variety stores, and in supermarkets. Suggested price for the 12-oz. can is 98¢; a 6-oz. size, 79¢. Black, brown, tan, ox-blood, neutral and white colors are offered.

New Way for Waxes: Pleased as it is with Sprayola, Power-Matic regards it largely as just one of the many applications for its aerosol-packing technique. As a contract packager, the

PITT-CONSOL

Ortho Cresol

"LET'S TALK
'TURKEY'
ABOUT YOUR
ORTHO CRESOL
SUPPLIES!"



If assurance of quality and escape from an up-and-down supply situation are important to you in your ortho cresol purchases, then you'll want to specify PITT-CONSOL on your next order! For PITT-CONSOL is the *new* symbol for uniform, top quality and reliable, continuing supplies of ortho cresol, regardless of gyrating marketing conditions. Consider these important PITT-CONSOL advantages:

QUALITY . . . assured by a new production process developed from years of research in coal carbonization and tar refining . . . and controlled by the latest analytical methods.

VOLUME . . . assured by unlimited supplies of raw materials.

DEPENDABILITY . . . assured by the resources of the nation's largest company in the commercial coal industry.

DELIVERIES . . . made promptly through easy access to every means of transportation . . . by tank car, tank truck or drums.

These advantages apply to the complete family of PITT-CONSOL Phenols, Cresols and Cresylic Acids! *And complete technical assistance is at your service!*

WRITE FOR SPECIFICATION SHEETS
.....



PITT-CONSOL CHEMICAL COMPANY

A SUBSIDIARY OF PITTSBURGH CONSOLIDATION COAL CO.
191 DOREMUS AVE., NEWARK 5, N.J.

WSW 6170

Newark Phone: MArket 3-3800 New York Phone: PENnsylvania 6-9030

SPECIALTIES

firm sees several ways to put its process to work.

Essentially, the process permits use of a high-melting-point wax, like carnauba, in a supersaturated solution, in which the propellant is the solvent. Waxes processed this way, the firm avers, won't settle out, and won't clog the fine orifice in the spray valve.

Besides the shoe polish, Power-Matic is now making a gun oil, which can be sprayed into the firearm without its being disassembled. But Power-Matic also foresees such items as furniture polish, floor wax and lubricating oils in the aerosol package.

PRODUCTS

Choice in Cleaners: New forms of sodium lauryl sulfate for the manufacture of washing products have just been introduced:

- American Alcolac Corp. (Baltimore) is selling a dry white powder with 75% active content. Tagged Sipex OP, the new compound is produced by a novel process that Alcolac recently put into operation. It permits, says the firm, "substantially" lower sodium lauryl sulfate prices.

- Synthetic Fertilizers and Chemicals, Inc. (New York), is importing from Tensia Co., a European firm, surface-active agents based on lauryl sulfate. Sodium salts in both powder and needle form are offered, as well as a magnesium powder (said to have a softening effect on the skin).

Giant for Fluids: A half-gallon metal container for synthetic detergents is now being made by Continental Can Co. With cemented side seam, lithographed top, the oblong ("F" or "I" style) can is said to be the first of its size with a polyethylene nozzle. Current models of the container have a wire carrying handle, but later models will feature a strap-type grip. Lever's Wisk is packed in the can.

EXPANSION

New Partners: Continental Car-Na-Var Corp. (Brazil, Ind.), an industrial wax products maker, and National Vending Corp., automatic merchandising machine manufacturer, have merged, and will begin manufacture and sales of consumer wax products. First product will be Continental "18," a household polish.

RARE EARTHS AS CATALYSTS

An application which offers intriguing possibilities

a report by LINDSAY

EVER tried to burn a cube of sugar? It can't be done, you know—unless you use a catalyst . . . in this case cigarette ashes. Dust the cube with ashes, apply a match and presto—you have a junior inferno.

Of course, you're not vitally interested in burning cubes of sugar—aside from amazing your non-technical friends. We mention this little experiment to focus attention on the use of rare earths as catalysts.

Cerium and cerium oxide are being used for this purpose in several industries. And it is highly probable that among the other rare earths, you will find some that have important commercial possibilities in your operations.

Interest in the rare earths as catalysts is gaining momentum. Although we, at Lindsay, do not make catalysts ourselves, we do supply rare earth materials for this use. Here are some of the operations where rare earths may have a place in your industry. *Ammonia Synthesis and Oxidation, Combustion and Oxidation, Dehydration, Dehydrogenation and Hydrogenation, Fischer-Tropsch Reaction, Halogenation, Methanol Synthesis, Polymerization, Crude Oil Cracking, Paint Driers.*

If any of these processes play a part in your plant operations, you may find it richly rewarding to

investigate rare earths as catalysts.

This is only one of the many, many applications of these unique metals. Here at Lindsay, we have been refining and developing rare earths for over 50 years and almost every day we hear of new uses for them. Scientists in more and more industries are turning to the rare earths in their search for ways to improve their products and processes.

Take Lindsay's cerium oxide, for example. It has revolutionized glass polishing practices and is also used in colorizing and decolorizing glass.

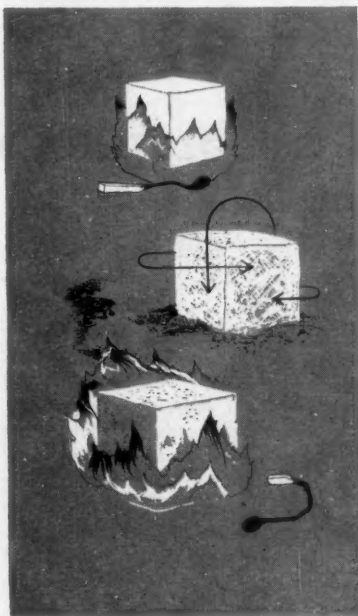
Lindsay's rare earth chloride (a

natural mixture of the chlorides of cerium, lanthanum, neodymium and praseodymium and some other rare earths) is used extensively in the textile industry, the metal industry and in the manufacture of paint and ink.

You'd be surprised at the diverse uses of rare earths in today's industrial technology. It seems as if every time you turn around, some researcher has found a new and practical application for one or more of these amazing metals. That's why we would like to suggest that you look at the rare earths with an eye toward their use as catalysts in your operations.

Some technical people have tended to overlook the rare earths, believing them to be unavailable in commercial quantities. This is not true. Lindsay is engaged in large scale production of cerium, rare earth and thorium chemicals, and offers them for prompt shipment in quantities from a gram to a carload.

To aid you, the accumulated data and the advice of Lindsay's technical staff is at your service. Your inquiry is invited.



PLEASE
ADDRESS INQUIRIES TO:

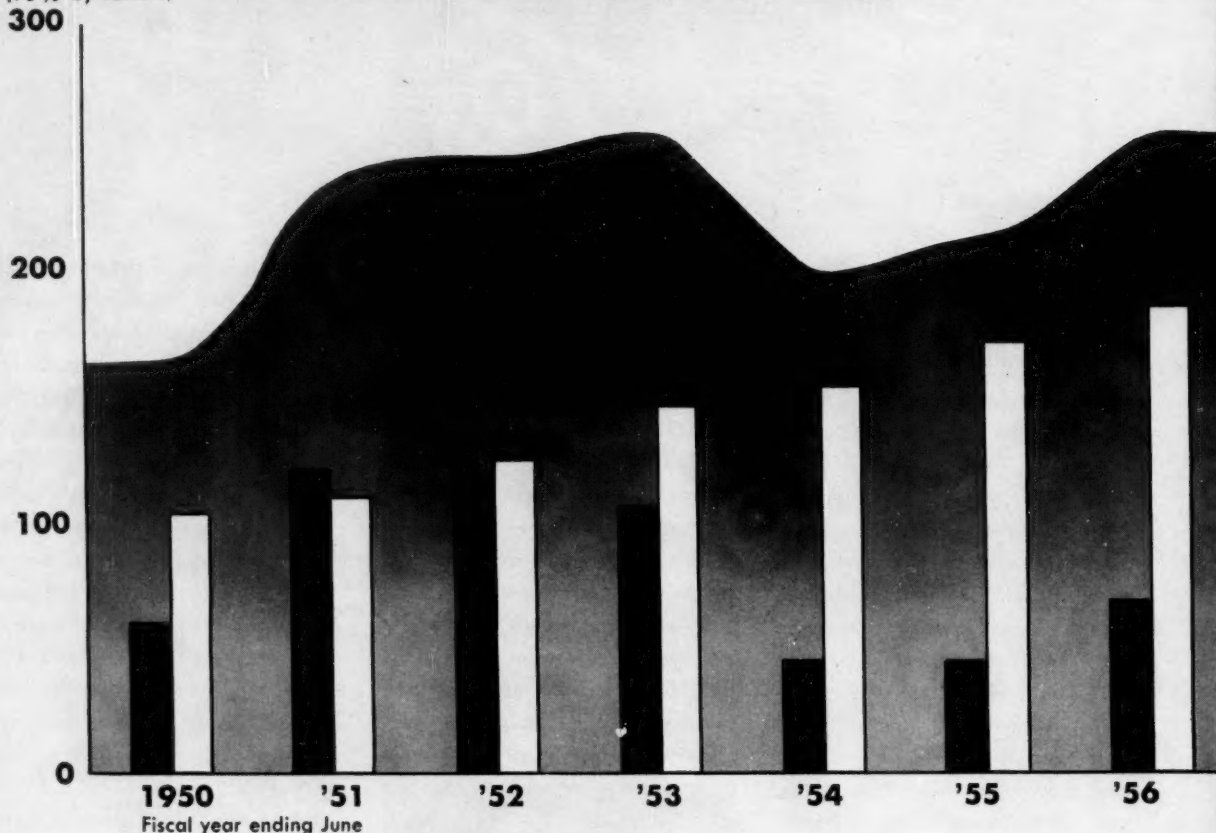
LINDSAY CHEMICAL COMPANY

270 ANN STREET, WEST CHICAGO, ILL.



U. S. INDUSTRIAL ALCOHOL

million gal.
(95% by volume)



Ethanol Faces a Complex Future

Demand for industrial ethyl alcohol continues to zip along. Shipments are running a good 10-15% above last year's rate and have been heavy enough over the past several months to push total U.S. production close to the highest level reached during the last 10 years (see chart). And it's more than likely that output next year will top the peak hit in '51.

But the supply/demand facet is only one portion of the complete and complex ethyl alcohol picture that producers and consumers are currently scrutinizing. For alcohol's market condition has an important impact on hundreds of chemicals, including acetaldehyde, acetic acid, ethylene dibromide, a number of ethers and ethyl chloride. And via ethylene, synthetic alcohol's raw material, effects

ripple out to ethylene oxide, ethylene glycol and polyethylene.

Attracting most attention among users and sellers is—and has been—alcohol price. The recent third-quarter advance of 5¢/gal. (*CW Market Newsletter*, June 23), which nudged tank tags* to 47¢/gal., was not completely unanticipated. Indications were obvious as far back as last fall that further increases were coming, when marketers first hinted that selling prices would be upped "only" 2¢/gal. at the beginning of the new year. And there are signs today that the current level may be more a floor than a ceiling for ethanol's future price structure. On a plateau during '54 and '55, the price curve has been definitely turned upward by the two '56 hikes.

*190 proof, tax-free.

Few believe, though, that ethanol will emulate the pattern of the Korean period when prices skyrocketed from a low of about 29¢/gal. in '49 to near 90¢ in '51. Just as unlikely, too, insist sellers, is that the price will ever again plummet as it did from '51's range to the 40¢/gal. level that held during the last two years.

Reason for the predicted lack of violent fluctuations: relatively recent emergence of synthesis as the chief way of producing ethyl alcohol, in contrast with the older molasses fermentation process. Dramatically underscoring the switch: it's estimated that slightly over 72% of the ethanol produced in this country in the fiscal year ending June 30, '56, came from ethylene directly or from ethylene via ethyl sulfate; some 22% from ferment-

TOTAL OUTPUT *dips*

and surges—not

because of steady

SYNTHETIC, ☐ *but*

because of fluctuating

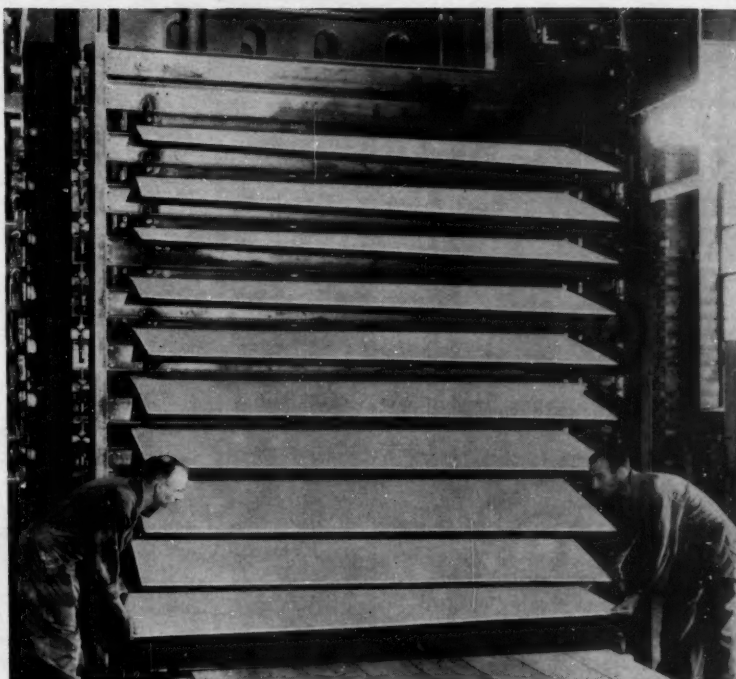
FERMENTATION ☒

production

tation of molasses; the remainder from grain, sulfite liquor and other materials. Just prior to World War II, molasses yielded about 72% vs. 21% produced synthetically.

Cost Lever: Cost of blackstrap molasses, chiefly Cuban material, has often been the prime "manipulator" of ethyl alcohol prices. Over the years, wide swings in prices of the raw material (from a low 4¢/gal. to a high 36¢ at times) have just about pressured fermentation producers out of the market.

Aside from the comparatively small amount (probably considerably less than 5 million gal./year) being made by Commercial Solvents and U.S. Industrial, only one company, Publicker, has chosen to weather the molasses supply-and-price buffeting as well as the increasing synthetic alcohol outpouring. Bolstering Publicker's stiff resistance to the switch are the com-



ANOTHER JOB **PHENOLIC RESINS** *can do well...*

For thousands of years men have planed, sawed, turned, and otherwise cut wood down to suit their purposes, but now they build it up too.

Wood particles, mixed with the right amount of the right Durez phenolic resin, are formed under heat and pressure into board sheets or molded products for a multiplicity of uses. Particle wood can indeed be called an improvement on the natural kind because its density, strength, and other properties are subject to control in manufacture.

As leaders in working with the wood, rubber, abrasives, and other industries for improvement of products and processes with resins, may we suggest that *resins may have unrealized possibilities for your business*. The Durez phenolics are mechanically strong, self-insulating, and resistant to heat, humidity, and many alkalies and acids.

Qualified field experts backed by long experience in research and development are available for consultation. Let us help you.

INVESTIGATE THESE PROPERTIES NOW...

Electrical Resistance	Dielectric strength up to 600 volts per mil and power factor of 2.2%.
Chemical Resistance	Insoluble in acids, mild alkalies, and all organic solvents.
Heat Resistance	Up to 450°F. continuous and 700°F. intermittent with no carbonization.
Mechanical Strength	Transverse (flex.) 11,000 lbs. p.s.i. Impact (Izod) .22 to .25 ft.-lb./in. Tensile 5-6,000 lbs. p.s.i.
Water Resistance	Impervious to hot and cold water...forming completely water-resistant glue lines.



Phenolic Resins that fit the job

DUREZ PLASTICS DIVISION

HOOKER ELECTROCHEMICAL COMPANY
908 Walck Road, North Tonawanda, N. Y.

Export Agent: Omni Products Corp., 460 Fourth Avenue, New York 16, New York

HOOKER
CHEMICALS
PLASTICS

DOES *THIS* CONCERN *YOU?*

It does, indeed, if you have any unpleasant industrial processing or product by-odors to contend with. It concerns you because the practical advantages to be gained from effective control or neutralization of bad odors far outweighs, in most cases, the small cost involved. A representative of our Industrial Odorant Division will be glad to discuss with you the use of specially formulated odorants and the newer techniques of effective odor control. A word from you detailing the nature of your problem will help us to help you.

FRITZSCHE Established 1871
Brothers, Inc.
PORT AUTHORITY BUILDING
76 NINTH AVENUE, NEW YORK 11, N.Y.

Danitra

NITRATES

POTASSIUM
BARIUM
SODIUM
STRONTIUM

Davies Nitrate Co.
INCORPORATED

118 LIBERTY STREET NEW YORK 6, N.Y.

MARKETS

pany's tremendous molasses and alcohol storage facilities.

But adding further to the problems of the fermentation alcohol producer is the continuous growth in the amount of molasses funneling to the mixed-feed industry and direct on-farm feeding of livestock. Already such outlets consume approximately 70% of the total molasses supply once ticketed almost exclusively for alcohol production.

But offsetting, to some extent, the lessening quantity of molasses available to alcohol has been the drop-off in the need for alcohol to make butadiene (*see end-use pattern, below*). This, of course, has been the case since the government stepped out of the synthetic rubber business. Few expected then that the government or, for that matter, private industry, would again—barring another worldwide flare-up—care to turn out butadiene via the fermentation-alcohol route. The reason, of course, is strictly economic: production of alcohol-derived butadiene is far more expensive than production directly from petroleum products.

Thus, it came as a surprise when Publicker late last year (*CW Market Newsletter, Dec. 17, '55*) once more started making butadiene from alcohol. But the pressing need for butadiene for the country's rapidly expanding synthetic rubber production, believed Publicker's officials, was ample justification for the move.

The company holds a lease, running

into 1958, on the government-owned 90,000-tons/year butadiene plant at Louisville, Ky., but only one of the three units is now operating. Consumption of alcohol for rubber use, by the end of the year, may total 19-20 million gal., but if Publicker should activate the other butadiene lines—as has been contemplated—this outlet could once more assume its traditional role as the chief distorter of the alcohol end-use pattern. For example, the rubber industry, which last year took less than 2 million gal. of alcohol, was consuming 120 million gal./year as recently as five years ago.

More Stable, but Higher: Less erratic has been the alcohol demand of chemical manufacture. Except for a slight dip in '54, consumption has been generally uptracking. Use as a solvent, in drugs and pharmaceuticals and in the manufacture of acetaldehyde, acetic acid and other chemicals, for instance, may account for 20 million more gallons in the fiscal period ending this June than were used during brisk selling in '53.

Consumption over the past few months has consistently outpaced production; paradoxically, this country's capacity for making alcohol (fermentation and synthetic) is more than ample to cover any anticipated increase in consumption.

On the one hand, output of molasses-based alcohol is currently slightly better than 70 million gal./year. That's high, compared with 40-45-million-gal. rate of the last two years,

Industrial Ethyl Alcohol* End-Use Pattern

(millions of wine gallons)

	Fiscal year ending June 30			
	1953	1954	1955	1956 (est.)
Acetaldehyde	112.2	96.7	116.2	125.0
Solvents and misc. uses (food products, cleaning preparations, other industrial products)	42.9	44.3	46.2	50.0
Other chemicals (acetic acid, ethyl chloride, etc.)	42.5	40.7	41.1	47.0
Synthetic rubber	28.6	1.7	1.7	10.0
Drugs, pharmaceuticals	11.6	12.3	13.0	14.0

*Based on Bureau of Internal Revenue reported data.

*Excludes tax-paid material, completely denatured alcohol, and recovered alcohol.

"2,6-di-tertiary-butyl-para-cresol where art thou?"



When I go looking for turkey feed, as I am wont to do on dull summer evenings, I always look for the feed that is protected with Koppers BHT antioxidant, also known as **dbpc**[®] antioxidant.

Because it so effectively inhibits rancidity, discoloration, and other manifestations of oxidative degradation, I look for **dbpc** when I buy gasoline, candles, plastics, or switch gear oil. Because it is safe to use in foods and edible oils and because such a little goes a long way, I look for Koppers BHT antioxidant when I buy bread, feeds, lard, peanut butter, or potato chips. If you make any of these products, you ought to look for Koppers BHT, too, and *use* it.

Here are some other quality Koppers chemicals that you may be interested in: Koppers styrene monomer—the best starting point to make GR-S type synthetic rubber for tires, shoe soles, hose, belting, and several hundred other rubber products.

Koppers resorcinol—the best base for tire cord adhesives. In fact, resorcinol is *the only* adhesive base that will assure a tight, firm bond between rubber and the new synthetic tire cords.

Koppers phthalic anhydride—extra-pure, and therefore low in color, for water-white plasticizers and for alkyd resins in paints, lacquers, and varnishes.

And the list could go on. But make it easy for yourself—just remember to check with Koppers when you need chemicals. Koppers chemicals can serve you if your business is food, paper, petroleum, wood, rubber, paint, plastics, paper-board boxes, animal feed, dye, pharmaceuticals, cosmetics, shoes, insecticides. Send the coupon for specific information.



**KOPPERS
CHEMICALS**

SALES OFFICES: PITTSBURGH • NEW YORK • BOSTON • PHILADELPHIA • ATLANTA • CHICAGO
DETROIT • HOUSTON • LOS ANGELES • SAN FRANCISCO

In Canada: Dominion Anilines and Chemicals Ltd., Toronto, Ontario

Koppers Company, Inc.
Chemical Division, Dept. CW-86
Pittsburgh 19, Pennsylvania

Please send literature on Koppers Chemicals.
My particular field of interest is:

Name _____

Firm _____

Address _____

City _____

State _____

This is not an offer of these Securities for sale. The offer is made only by the Prospectus.

NEW ISSUE

\$30,000,000
Food Machinery
and Chemical
Corporation



3.80% Sinking Fund Debentures,
Due July 15, 1981

Price 100% and accrued interest

Copies of the Prospectus may be obtained in any State in which this announcement is circulated from only such of the underwriters, including the undersigned, as may lawfully offer these securities in such State.

Kidder, Peabody & Co.

Lehman Brothers Blyth & Co., Inc. The First Boston Corporation

Eastman, Dillon & Co. Glore, Forgan & Co. Goldman, Sachs & Co.

Harriman Ripley & Co.

Lazard Frères & Co.

Merrill Lynch, Pierce, Fenner & Beane

Smith, Barney & Co.

Stone & Webster Securities Corporation

White, Weld & Co.

July 25, 1956.

DIACETYL

MONOMERIC LIQUID WITH
97% MINIMUM ASSAY
MELTING POINT -5°C (MIN.)

ACETYL METHYL
CARBINOL
(ACETOIN)

CRYSTALLINE SOLID WITH
90% MINIMUM ASSAY

WRITE FOR LATEST PRICE SCHEDULES
WAREHOUSE STOCKS CONVENIENTLY LOCATED
THROUGHOUT THE COUNTRY



LUCIDOL DIVISION
WALLACE & TIERNAN INCORPORATED
BUFFALO 5, NEW YORK

MARKETS

but it's under the 121 million gal./year turned out during the Korean period, and considerably below the estimated 175 million gal./year that could be produced if all existing molasses fermentation facilities were utilized.

On the other hand, synthetic production, which amounted to about 114 million gal. in '51, is up to some 185 million gal./year—yet output is far short of the estimated 240-million-gal. synthetic capacity in place.

Then why the mild tightness in alcohol supply? The answer, actually, isn't too obscure. For one, fermentation alcohol capacity is usually pressed into service—and to just the extent needed—to plug the void between synthetic production and total alcohol demand. Synthetic alcohol, though, depends chiefly on how much ethylene producers are willing to divert to its manufacture. Today, perhaps 70% of total U.S. ethylene is filtering into such high-return items as ethylene oxide (to ethylene glycol), polyethylene, styrene, ethylene dichloride, ethylene dibromide, and others. It boils down to a simple dollars-and-cents policy. Synthetic makers, assured that fermentation material is available to forestall any serious shortage of alcohol, would rather use their ethylene to turn out the higher-priced commodities.

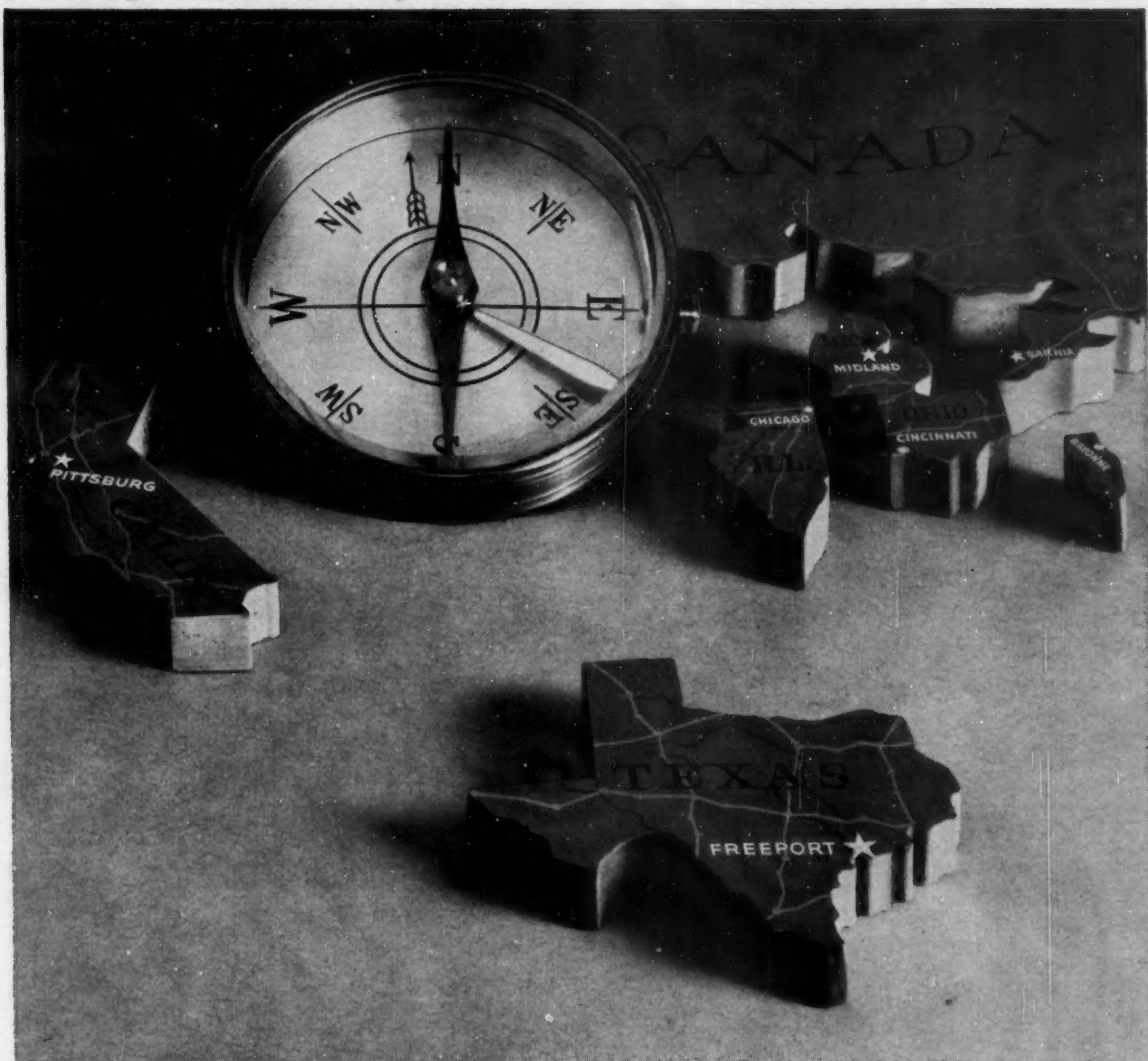
There may be a change coming, however. Expansions in the works could push total ethylene production to at least 2 million tons/year by 1960 (CW, Feb. 4, p. 72), make such allocating—and diverting from alcohol manufacture—unnecessary.

Whether or not such an ethylene outpouring will eventually sound the knell for fermentation alcohol is, of course, a matter for conjecture. But, in view of the dwindling supply of molasses available for alcohol manufacture, and the mushrooming of petroleum-based butadiene plants, it doesn't seem inconceivable that Publicker (as some believe) may soon decide to step out of the picture, as did Du Pont a few years ago.

This much is certain, though: alcohol consumers have little to worry about regarding supplies. Few chemical commodities have as few market-pinching factors in their future. About the only problem that users will likely have to face is higher price. And that may come at the beginning of the new year.

fast, dependable delivery

DOW



★ Producing Plants
● Terminals

seven shipping points for DOW HYDROCHLORIC ACID

Whatever the time, whatever the place—Dow operates an efficient service you'll appreciate! No broken promises, no irritating and costly delays. Dow has four producing plants and three additional distribution terminals that add up to seven reasons why you will receive your shipment promptly *when and where* you want it.

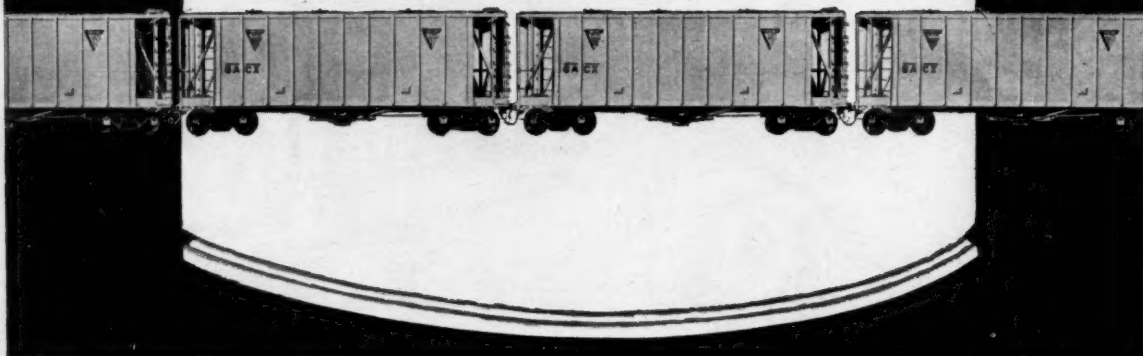
Order a specific concentration of Dow hydrochloric acid for your particular needs—it will be of the *very highest quality*. Order from the leading supplier of this important chemical. Contact the nearest sales office or THE DOW CHEMICAL COMPANY, Department IN 784U-1, Midland, Michigan.

you can depend on DOW CHEMICALS

DOW

Flour, starch, plastics, sugar—these are a few of the many products successfully shipped in General American's Airslide Car.

35 tons of
CHEMICALS
in one package



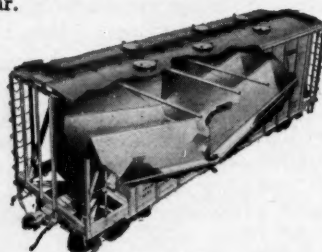
Save! Ship chemicals in bulk via Airslide® cars

Airslide cars provide *safe, clean, economical* bulk transportation for dry, powdered chemicals. 35 tons of lighter materials (and even greater quantities of denser materials) can be shipped in a single Airslide car. Over 2000 Airslide cars are now in use or on order carrying chemicals and other commodities. They require no re-spotting, provide far more clearance for unloading and can be unloaded into any conveying system as fast as the system permits. If such requirements are important to you, write today for full information about General American's new Airslide car.

CLEAN INTERIOR DESIGN. All-welded construction provides maximum sanitation and minimum product retention. All hatches and outlets provide a hermetic seal, assuring complete in-transit protection.



GENERAL AMERICAN TRANSPORTATION CORPORATION
135 South La Salle Street • Chicago 90, Illinois • Service Offices
In Principal Cities • Service Plants Throughout The Country.



Market Newsletter

CHEMICAL WEEK
August 11, 1956

How many '57 model cars will roll out of Detroit in the next few months? More than one segment of the chemical process industries (rubber, glass, textiles) would like to pinpoint the answer to that poser. And so would antifreeze sellers.

It's fairly well established that no matter how many cars are produced—and at least one industry observer anticipates a 6-million-unit year—there's a definite switch coming in the type of antifreeze carmakers will use to protect their shipments; emphasis this year will be on glycols rather than methanol.

Pointing up the change: last year the glycols accounted for less than 45% of all the antifreeze poured into predelivered autos; this year the slice is expected to be nearer 60% for the "permanent." Reason, say some, may be more "sales-gimmickey" than protective.

Production of industrial alcohol in Canada appears to be slipping in contrast with the upturn in U.S. output (*see p. 76*). A recent Canadian government report notes that output during '55 dropped slightly to 6.4 million proof gal., from the more than 6.5 million turned out the previous year. Dollar value is down proportionately: \$1,986,135 last year vs. \$2,087,004 in '54.

Tranquilizer drug sales, now hitting a \$50-million/year rate, may shoot up to about \$150 million during '57, one observer tells *CW*. He also notes that several mental hospital administrators are predicting that tranquilizers, within a few years, will be increasingly prescribed by physicians as adjuncts to treatment of other ailments. Prime idea: to keep the patient relaxed and cheerful while undergoing corrective treatment.

Incidentally, labeling of reserpine products has been under review by Food & Drug Administration, and word out of Washington is that holders of new-drug applications covering these products will soon be advised of the agency's current views on such labeling.

Strikes in the chlor-alkali industry continue to spark speculation concerning chlorine prices. Big question: Is a fourth-quarter hike in store for consumers? Some users figure it is.

The deep cut in chlorine production engendered by the disputes is just now beginning to be felt in a tightening supply situation in some areas. Add to this the resumed demand from consuming industries coming back to work after vacation and repair shutdowns, and probability of higher prices in the upcoming quarter doesn't seem too far-fetched. It happened last year.

There's one possible deterrent, though: new plants and expansions, by the end of '56, will boost chlorine availability (*CW*, Jan. 7, p. 73).

And prices, both actual and speculative, have some segments of the metals market in a tizzy this week. Take copper, for example. The spread be-

Market Newsletter

(Continued)

tween producers' and custom smelters' quotes narrowed again over the week-end, when the latter advanced their metal another $\frac{1}{2}$ ¢/lb. (the second time in a week), to set the price at 39¢. This compares with the producers' current 40¢/lb., established after the 6¢/lb. cut last month (*CW Market Newsletter*, July 21). Reason for the smelters' two-step hike, however, has trade observers puzzled.

Some attribute the increases to a pickup in buying to replenish whittled inventories; others opine the move was influenced by copper advances on the London Metal Exchange late last week.

Whatever the cause, unanimity between copper producers' and custom smelters' prices, which doesn't happen very often, may not be too far off.

There's price speculation on aluminum. Prediction making the rounds: new labor contracts being negotiated in the industry will boost aluminum tags 1 to 2¢/lb., with most guessers splitting the difference, betting on 1½¢. The latter would push primary ingot price to 27.4¢/lb., highest since the mid-'20s.

Talk, too, extends to the possible impact on prices for aluminum products, including those on sheet, extrusions and foil. Forecasters envision a 6% increase on these if the 1½¢ is tacked onto the ingot price.

Demand for synthetic ammonium sulfate will ease as steel strike-hampered coke-oven material again moves into the market. But there'll be no run on supplies. Why? This is the in-between season for fertilizers; carry-over stocks, because of the disappointing spring season sales, still pose a problem for domestic producers.

On the other hand, ammonium nitrate now costs \$1/ton more. Reason: August discounts are \$1/ton less than July's.

Higher phosphate rock schedules posted last week in most cases reportedly reflect increased labor costs. The increases, effective Aug. 1, range from 12¢ to 13¢/ton, depending on percent of bone phosphate of lime.

SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending August 6, 1956

UP

	Change	New Price
Nonyl phenol, dms., c.l., frt. alld.	\$0.005	\$0.265
Octyl phenol, works, tanks	0.005	0.23
Phosphate rock, Florida, land pebble, run-of-mine, dried ungrnd., bulk, c.l., b.p.l., mines, long ton		
72%-70%, same basis	0.12	5.99
75%-74%, same basis	0.12	6.99
78%-76%, same basis	0.12	7.99

DOWN

Crude cottonseed oil, tanks, Southeast	\$0.0025	\$0.125
Crude soybean oil, tanks, Decatur	0.00375	0.1175
Tung oil, dms., c.l., N.Y.	0.005	0.255

All prices per pound unless quantity is stated.

Your customers prefer **Tri-Sure[®] Utility Can Closures**

EASY TO POUR

Double hex cap extends spout and provides two sizes for pouring.

EASY TO RE-USE

Large opening makes it easy to clean out and re-fill the can for many uses.

STRONG, RIGID SPOUT

can be rested on filling opening.
Two lengths: 2" and 2 1/4"

Your products have a definite sales advantage when they are shipped in Tri-Sure[®] equipped utility cans.

You are a step ahead of competition when you specify Tri-Sure equipped cans—the containers that farmers, sportsmen, gardeners, and contractors prefer. Ask your supplier now for Utility Cans with Tri-Sure Nozzles, Spouts, Inner Seals and Hex Caps; Caps and Inner Seals can be supplied embossed with your private design.

Tri-Sure Closures will give you the best solution to every closure problem—for every product shipped in cans, pails or drums. Send for full information now on the complete Tri-Sure line.

COMPLETE PROTECTION

Heavy-weight nozzles and spouts are gasketed in the clinching rim for complete protection. All fittings are above chime to prevent seepage.

*The "Tri-Sure" Trademark is a mark of reliability backed by over 35 years serving industry.

AMERICAN FLANGE & MANUFACTURING CO. INC., 30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.
CHICAGO, ILL. • NILES, OHIO • LINDEN, N. J.

Tri-Sure Products Limited, St. Catharines, Ontario, Canada

Tri-Sure S/A Indústria e Comércio, Sao Paulo, Brazil

American Flange & Manufacturing Co. Inc., Miowera Road, Villawood, N.S.W., Australia

B. Van Leer N. V., Stadhouderskade 6, Amsterdam, Holland

Van Leer Industries, Ltd., Seymour House, 17 Waterloo Place, Pall Mall S.W. 1, London, England

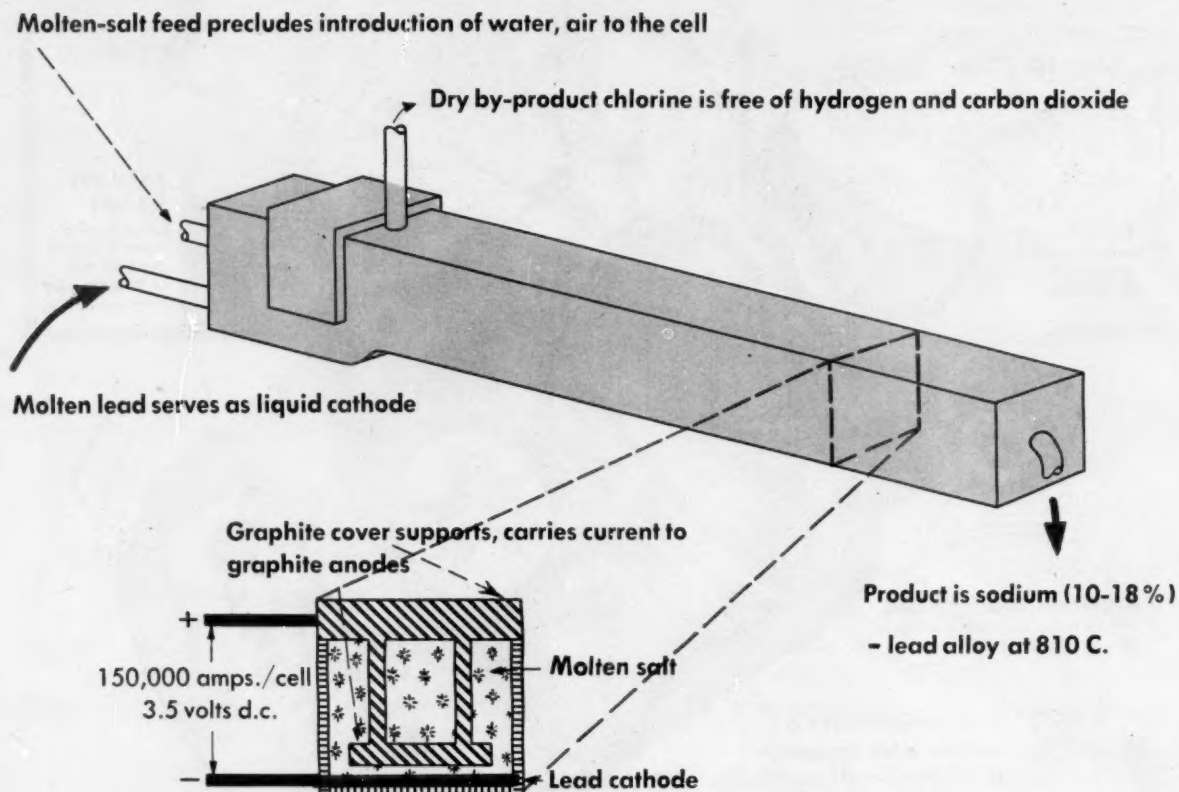
Always specify



CLOSURES

PRODUCTION

Here's what's different about the Szechtman cell



Now: Sodium Cell in an I Beam

Any resemblance between the new sodium cell sketched above and an old-fashioned I beam is purely intentional on the part of its inventor, Joshua Szechtman. A lead-cathode device, it's being billed by Chlorsodium Cells (New York City) as the slickest, quickest route to more sodium capacity. The firm has worked up cost estimates to show that the cell can drastically slash the expense of making sodium.

Experienced electrochemical people admit that the cell incorporates some bright design ideas. But they are quick to point out that, so far, the whole process is strictly on paper. It has not even been tested on a small scale, so far.

Chlorsodium counters these argu-

ments this way: the cell, it maintains, is made up of only sound engineering principles; although the combination is new, there is no reason why it shouldn't work. It also claims that it is right now making arrangements for financial backing to try the method out in a large cell that could turn out 5-10 tons of sodium metal daily.

Much Like Mercury: Basically, the Szechtman cell resembles a mercury cell, i.e., it's long and narrow, slopes slightly to permit gravity flow of the molten-lead cathode. Also like the mercury cell, it employs no diaphragm, uses graphite anodes. But that's where the similarity ends.

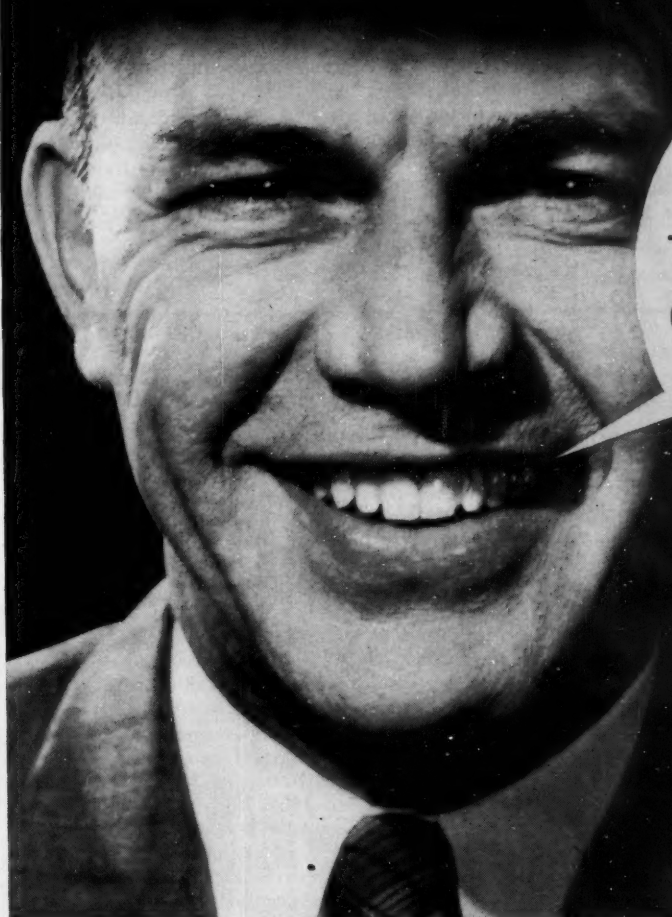
Instead of brine, the lead-cathode cell uses fused salt as an electrolyte. The salt is completely decomposed in

the cell, yields only pure, dry chlorine gas and sodium metal dissolved in the lead. Two reasons for using lead: it has greater capacity for dissolved sodium; it retains its fluidity better than does mercury (above 0.3% Na in mercury, the amalgam becomes sluggish).

Unlike all other sodium cells, Szechtman's system will operate free of hydrogen and oxygen. No water is introduced with salt; air is excluded by over-all insulation and inert-gas-purging at the start. This condition, says Chlorsodium, accounts for several of the other differences in the cell's operation.

For one thing, without the presence of explosive gases, the cell can be operated at high current densities—

Sodium **BICHROMATE**
Sodium **CHROMATE**
Potassium **BICHROMATE**



"I NEED
GOOD QUALITY...
THAT'S WHY I SPECIFY
COLUMBIA-SOUTHERN
CHROME CHEMICALS"

You'll like the fast, dependable service of Columbia-Southern, too. For over half a century, we have been serving American industry with essential chemicals. We realize the importance of meeting your production schedules... and we always do.

May we have the opportunity to show you?



DISTRICT OFFICES: Cincinnati • Charlotte
Chicago • Cleveland • Boston • New York
St. Louis • Minneapolis • New Orleans
Dallas • Houston • Pittsburgh • Philadelphia
San Francisco

IN CANADA: Standard Chemical Limited and
its Commercial Chemicals Division

**COLUMBIA-SOUTHERN
CHEMICAL CORPORATION**
SUBSIDIARY OF PITTSBURGH PLATE GLASS COMPANY
ONE GATEWAY CENTER • PITTSBURGH 22 • PENNSYLVANIA

when you want
top performance in

Heat-Transfer Fluids...and Mechanical Lubricants

use...

UCON

Brand

synthetic
fluids
and
lubricants

UCON heat-transfer fluids do not ordinarily sludge or gum after months of hard use at temperatures as high as 500°F. UCON lubricants have outstanding load-carrying capacity and antiwear properties. Both water-soluble and water-insoluble UCON lubricants are available in wide viscosity ranges.

UCON fluids and lubricants also give top performance as:


- Rubber and textile lubricants
- Hydraulic fluids
- Non-volatile solvents
- Anti-foam agents
- Chemical intermediates

Get the facts. Write TODAY for booklet, "UCON Fluids and Lubricants."



**CARBIDE AND CARBON
CHEMICALS COMPANY**

A Division of
Union Carbide and Carbon Corporation

30 E. 42nd Street  New York 17, N. Y.

"Ucon" is a registered trade-mark of UCC.

PRODUCTION

as high as 20 amps./sq. ft. of anode surface. It will, therefore, have about 10 times the capacity of the same size of mercury cell that operates at about 2 amps./sq. ft. Too, without oxygen to oxidize and erode them, the graphite anodes should have long service life, require only infrequent adjustment.

Process Flexibility: Another consideration that Chlorsodium boasts of is the adaptability of sodium-lead alloy produced. When sodium metal is required, it can be distilled off from the alloy by raising the product's temperature (it leaves the cell at 810 C) to 880 C. Traces of unrecovered sodium aren't lost, return to the cell when lead is recirculated by electromagnetic pump.

By treating the alloy with steam, its sodium component can be readily converted into anhydrous caustic soda. And by controlling the sodium content to 10%, an alloy can be produced for direct processing into tetra-ethyl lead.

Though sodium is the principal goal of the Szechtman cell, the company

claims that other alkali metals can be produced just as well. Potassium, for example, reacts with oxygen, therefore can't be produced in conventional electrolytic cells that admit air. But since there is no oxygen in the Szechtman cell, undesirable reactions can't occur. In the same way, it's expected to be able to produce lithium from LiCl, NaK (in demand as a heat-transfer medium for atomic reactors) from mixed potassium and sodium salts.

As Chlorsodium sees it, the combination of features should make it possible to drop sodium costs to unheard-of levels. Production costs via the Downs cell are believed to be 9-11¢/lb. Chlorsodium has worked up a set of figures for the Szechtman cell showing costs of less than 2¢/lb. Most of the savings is predicated upon lower building costs due to the increased current densities that are permitted.

Few electrochemical people feel that such costs are realistic. But they agree that, even if they are four times that high, the Szechtman cell is worth trying.

Don't Overlook the Thermal Route

ABOUT all that can be said with any degree of assurance about the future of sodium is that there'll be a need for more of it (*CW*, June 2, p. 92). Exactly which process will prove to be the method of choice for new capacity is an open question. Certainly the Downs cell, used by the commercial producers—Ethyl, Du Pont and National Distillers—has the inside track for any immediate expansions. And modifications of the electrolytic approach—e. g., the Szechtman cell—are being carefully considered.

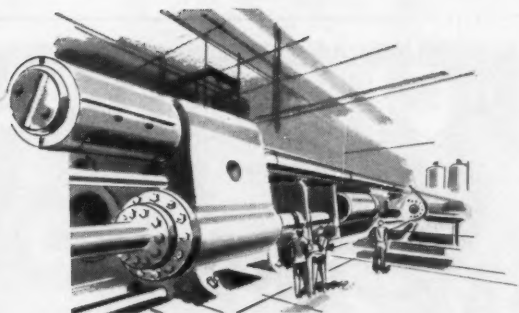
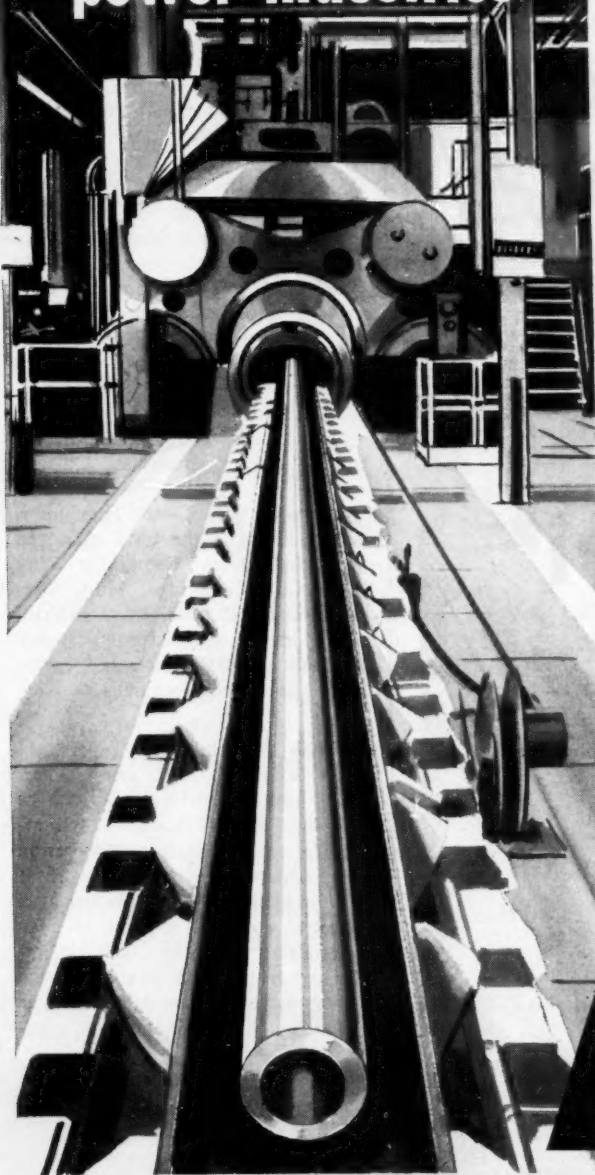
But other processes can't yet be counted out. For instance, a lot of work has been done on thermal reduction methods. As Marshall Sittig of Ethyl Corp. points out in his recent monograph on sodium, a number of thermochemical reduction processes have been explored.

Dow worked up one involving the distillation of carbon and soda ash (U.S. patent 2,391,728). Du Pont has investigated a similar process, as evidenced by its interest in methods of separating the products from such a process (U.S. patents 2,685,505; 2,685,346). Union Carbide has done some work on a process thought to involve the heating of ferrosilicon in the presence of lime and salt.

Dow has no plans right now for commercializing its process. Union Carbide's work in sodium stemmed from its need for the metal in titanium operations. It stopped with the decision to buy sodium. Du Pont, still working on sodium processing, refuses to discuss the subject.

But the amount of work being done on thermal processes is strong evidence that they are not being overlooked as potential commercial routes to sodium.

**For longer life,
higher performance
in the petroleum,
chemical and
power industries**



Corrosion-Resistant, Heat-Resistant EXTRUDED Steel Pipe

Curtiss-Wright's Metals Processing Division now offers the petroleum, petrochemical and power industries a line of high-quality, extruded steel tubular products to meet the most severe demands of modern processing. Inherent corrosion and heat-resistant properties of the steel alloys used are amplified by extrusion because the finished tube is produced with only one heat, in one pass of the giant 12,000 ton press . . . formed under compression in a matter of seconds without seams, in lengths up to 50 feet. Extra margins of resistance to corrosion and heat are built in easily by extruding heavier pipe wall thicknesses at no sacrifice in production speed. The most up-to-date quality control facilities, including **ULTRASONIC TESTING**, are employed in production.

Curtiss-Wright's extrusion facility is a specialty mill, ideally equipped for the production of special purpose, premium quality tubing. Conformance to A.S.T.M. specifications and other exacting standards is assured by an experienced engineering staff and the most modern metallurgical testing equipment.

When higher pressures and temperatures, or more corrosive service conditions demand more than the ordinary in large diameter pipe, let Curtiss-Wright serve you through the nearest Metals Processing Division Branch Office, or write to the Main Office address shown below.

79 Grider Street, Buffalo, New York

METALS PROCESSING DIVISION

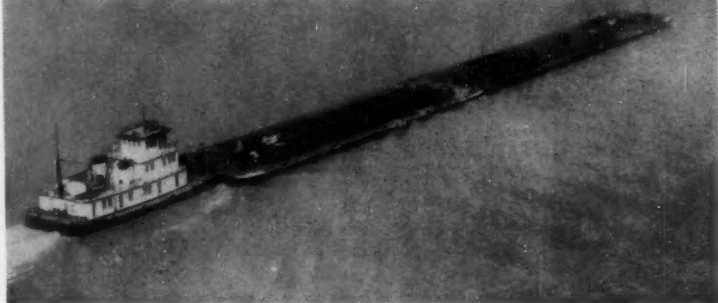
CURTISS-WRIGHT



CORPORATION • BUFFALO, NEW YORK

ELECTRONICS • NUCLEONICS • PLASTICS • METALLURGY • ULTRASONICS • AVIATION

CHEMICALS ?



**USE THE SOUTH'S MOST ADVANCED
BARGE LINES TO AND FROM GULF
AND INLAND PORTS**

Serving ports and intermediate points on the Gulf Intracoastal Waterways, Warrior and Tombigbee Rivers, and their connecting waterways in Texas, Louisiana, Mississippi, Alabama, Florida. Also principal ports and intermediate points on the Mississippi, Ohio, Illinois, Missouri, Tennessee and Cumberland Rivers and their tributaries.

Member, American Waterways Operators, Inc.

ESTABLISHED

1865

COYLE LINES
INCORPORATED

**CUT FREIGHT
COSTS**

**SHIP BY
BARGE!**

GENERAL OFFICES:
P. O. Box 6056, Station A
New Orleans 14, Louisiana

BRANCH OFFICE:
City National Bank Bldg., Houston 2, Texas

it's **WINTHROP** *for* **INTERMEDIATES!**

- **DIPHENYLACETONITRILE**
—for analgesics, antispasmodics
- **3-NITROBENZOIC ACID**
—for anesthetics and ??*
- **1-PHENYL-3-CARBETHOXY-PYRAZOLONE-5**
—for red dyes
- **1-PHENYL-3-METHYL-PYRAZOLONE-5**
—for yellow, green dyes

**why not send for a sample and tell us!*

Winthrop
LABORATORIES

SPECIAL CHEMICALS DEPT. CW-86
1450 Broadway, New York 18, N. Y.

PRODUCTION

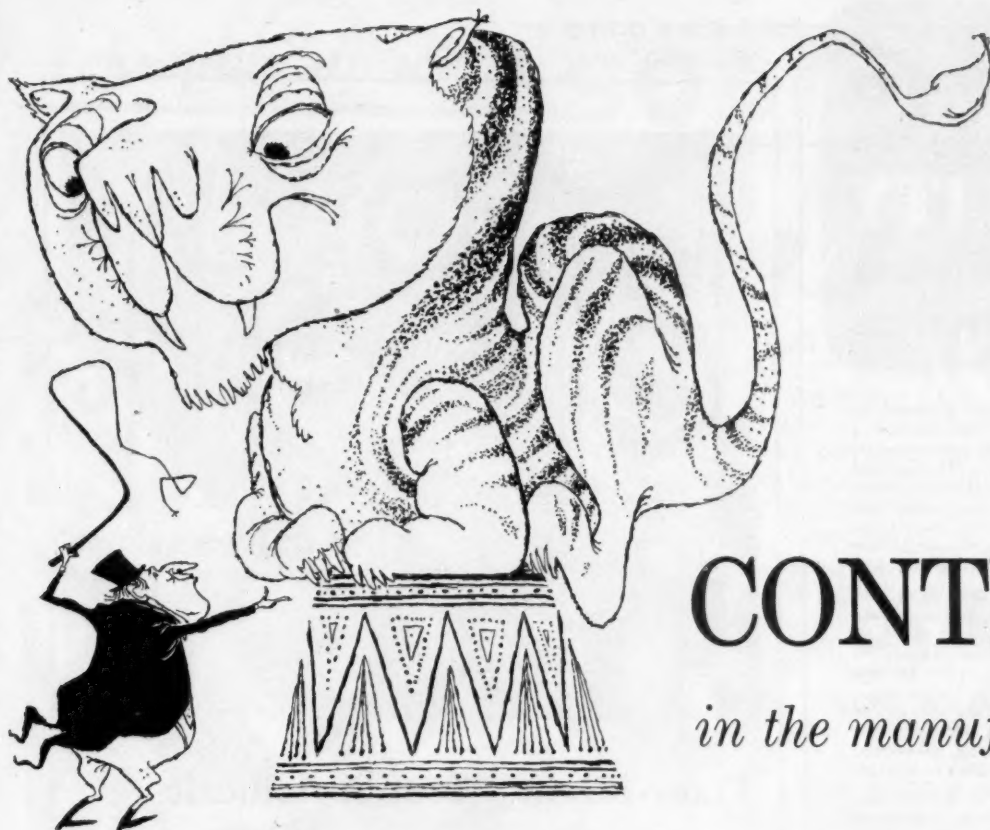
EQUIPMENT

Drafting Aid: Time required to make piping drawings may be cut through the use of A. Lawrence Karp's (Greenwich, Conn.) new template containing commonly used pipe-fitting symbols. Symbols for outside diameters, end bells, flanges, elbows and tees of various sizes are included on the 5¼-in. x 8-in. rigid, transparent Vinylite template. Accurately cut apertures allow for pencil tolerances, give dimensional stability, says Karp. Printed tables relate the symbol to six different scales from ⅛ to ¾ in. per ft.

Speed Changer: Metron Instrument Co. (Denver) now puts anodized-aluminum end bells with two pressed-fit ball bearings for each shaft on its adjustable-ratio speed changer. Smoother operation is claimed because the concentricity between input and output shafts is closer than that of earlier models with phenolic end bells. Also, metal construction gives greater impact and vibration resistance, more temperature stability, less torsional spring effect. The 6-oz. unit delivers 0.025 hp., 5 to 40 ounce-inches of torque, depending on ratio setting. Speeds up to 10,000 rpm. on either shaft are permissible.

Titanium Wire Cloth: Titanium is now available in the form of woven wire cloth from Cambridge Wire Cloth Co. (Cambridge, Md.). Sizes range up to 60 mesh. Recommended uses: filtering and screening highly corrosive materials, such as chlorine dioxide and hypochlorite bleach.

Teflon Tape: Permacel Tape Corp. (New Brunswick, N.J.) offers a new Teflon film tape for application where Class H electrical insulation and resistance to chemicals and abrasion are required. Called Permacel 421, it has low moisture absorption and high dielectric strength, is inert to such materials as aqua regia, sulfuric, nitric and hydrofluoric acids. Average properties: tensile strength, 30 oz. per inch of width; elongation, 250%; adhesion to steel, 25 oz. per inch of width; caliper, 6.8 mils; permissible continuous operating temperature, —500 F to 500 F. The new type is available in 36-ft. rolls; widths range from ¼ to 6 in.



CONTROL

in the manufacture of

PICCOLYTE

brings you these SEVEN outstanding advantages

PALE COLOR—Exceptionally light-colored hydrocarbon resin

NEUTRAL—Low acid number—unsaponifiable

ECONOMICAL—Low in first cost and soluble in low-cost petroleum solvents

LOW-COST—Made by modern process that permits low selling price

PERMANENT—Stable and non-yellowing—unaffected by alkalies and salts

WATERPROOF—Piccolyte resins are unaffected by water or moisture

MANY GRADES—Standard and special grades in melting points from 10° C to 135° C



Pennsylvania Industrial Chemical Corp.

Clairton, Pennsylvania

Plants at:

Clairton, Pa.; West Elizabeth, Pa.; and Chester, Pa.

District Sales Offices

Boston, New York, Detroit, Chicago, Cincinnati

Los Angeles, Philadelphia, Pittsburgh

Pennsylvania Industrial Chemical Corp.

(CW)

Clairton, Pennsylvania

Please send me a copy of your bulletin describing PICCOLYTE Synthetic Resins and samples of grade for (application)

Name _____ Position _____

Company _____

Address _____

DIAMOND
Black Leaf
Assures
QUALITY
with **SSIRCO**
steel drums

Diamond Black Leaf Company relies on SSirco steel drums to carry a variety of emulsifiable insecticides for agricultural crops. The chemicals and activating agents used require special liners to assure quality control from plant to user. They chose these drums to keep their products constant, day after day, in storage and in shipment.

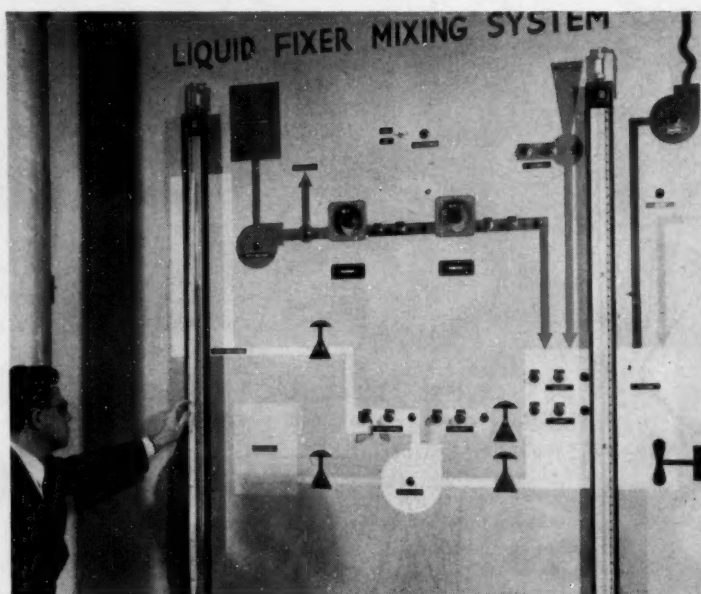
SSIRCO DRUMS are lined to fit individual specifications. Special hi-bake liners guard against rust or corrosion; insure that the product you process will remain the same as the day you packaged it. Only the highest grade steel is used in the manufacture of these containers. This means they will take a pounding, almost indefinitely, without danger of seepage or leakage.

THE DRUM PLANT in Birmingham, modern in every respect, is equipped to degrease, clean, phosphatize and silk screen, in addition to baking all types of liners for the chemical industry. SSirco drums are available in 30 and 55 gallon capacities and other special sizes. For full details contact either our Birmingham plant or Atlanta general office.



CONTAINER DIVISION
SOUTHERN STATES
IRON ROOFING CO.
SALES OFFICE AND PLANT
2830 Fifth Avenue, North
BIRMINGHAM, ALABAMA

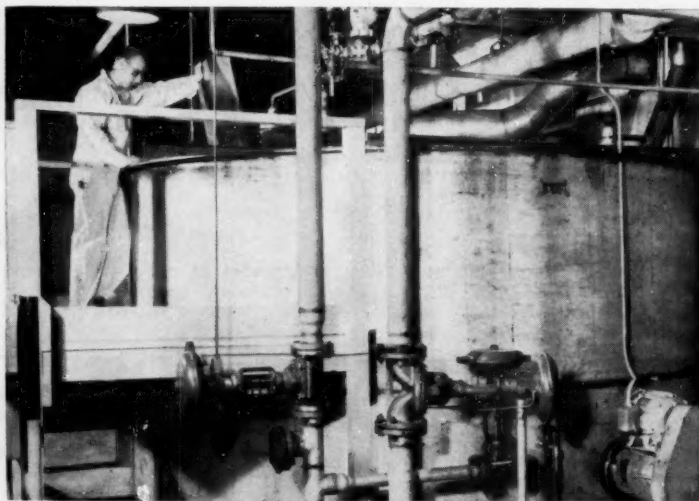
PRODUCTION



Fixer-Mixing Goes Automatic

WHEN THE OPERATOR above pushes a button, he does all the manual work necessary to start operation of Eastman Kodak's new system for mixing photographic fixing solutions. And he can observe such operations as the entrance of fixer ingredients into an agitation tank (below) from the graphic control panel (above). The operation

involves a 5,500-gal. batch, takes 2½ hours from the time the button is pushed until the first bottle of solution comes out. The streamlining of the fixer-mixer system at the Kodak Park works is a part of the firm's planned \$30-million expenditure for capital improvements of production units and offices in Rochester, N. Y.



keeping up with

SODIUM

METAL DESCALING USES SODIUM BY THE TON



THE SODIUM HYDRIDE PROCESS HAS STREAMLINED DESCALING OF STAINLESS STEEL AND OTHER METALS. REASONS FOR ITS WIDE AND RAPID ACCEPTANCE: IT IS FASTER THAN PICKLING (MINUTES INSTEAD OF HOURS) • DOES NOT BITE THE METAL • USES SIMPLE, STANDARD EQUIPMENT.

THE PROCESS: HYDROGEN (USUALLY PRODUCED BY DISSOCIATING AMMONIA) IS BUBBLED THROUGH MOLTEN SODIUM TO FORM THE HYDRIDE, WHICH IS THEN DISSOLVED UP TO 2% IN A CAUSTIC BATH AT 700°C. THE METAL IS DIPPED, AND THE REDUCED SCALE THEN KNOCKED LOOSE BY COLD WATER QUENCH. SHEETS, RODS, WIRE, STRIP, STAMPINGS HAVE ALL BEEN DESCALED COMMERCIALY VIA SODIUM HYDRIDE.

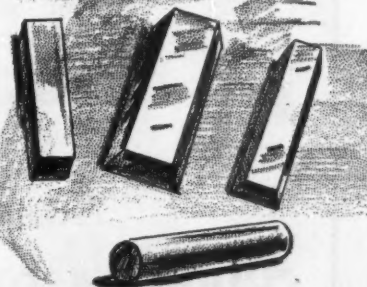
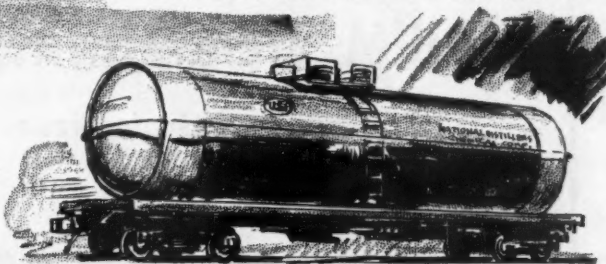
SODIUM AS YOU LIKE IT

NO MATTER WHAT YOUR SODIUM APPLICATION—PLANT, PILOT OR LAB SCALE—U.S.I. MAKES THIS METAL AVAILABLE IN THE FORM AND SIZE YOU NEED.

THERE IS THE GIANT ECONOMY

PACKAGE FOR BULK USERS—THE 40-TON TANK CAR OF SOLID MATERIAL. SODIUM IS ALSO PACKAGED CAST SOLID IN 55-GAL. STEEL DRUMS OR 5-GAL. STEEL PAILS.

THEN THERE ARE THE BRICK FORMS—IN 12, 5, 2½ AND 1-LB. SIZES—PACKED DRY IN 55-GAL. STEEL BARRELS. FOR SMALL USERS, 1- AND 2-LB. BRICKS CAN BE PURCHASED IN STEEL PAILS CONTAINING 20-LB. OF SODIUM. MORE DETAILS IN THE U.S.I. BOOK, "HANDLING METALLIC SODIUM ON A PLANT SCALE". WRITE FOR YOUR COPY.



Metal Strength Through Sodium

SODIUM ADDED IN SMALL QUANTITIES (0.05%) TO ALUMINUM-SILICON CASTING ALLOY YIELDS REFINED GRAIN STRUCTURE, GIVING IMPROVED TENSILE STRENGTH AND ELONGATION. SODIUM HAS ALSO BEEN USED AS A DEOXIDIZER FOR BRASS AND COPPER AS WELL AS THE REFINING OF LEAD.

U.S. INDUSTRIAL CHEMICALS CO.

Division of National Distillers Products Corporation
99 Park Avenue, New York 16, N. Y.
Branches in principal cities



Safer! Stronger! Cost-Cutting!

Aero RUBBER-CUSHIONED
STANDARD CORK-CUSHIONED

CARBOY BOXES
5 - 6½ - 13 Gal.

Longer-life, lower breakage, precision-made carboy boxes, built to I. C. C. specifications. Proof against rough handling and long-haul hazards. Cork or rubber-cushioned: The Strongest and Safest Made. Prompt service and deliveries.

BAUM & WILSE DIVISION

UNITED BOX & LUMBER CO.

45 Wheeler Point Road - Newark N. J.

Market 2-4500



Extra Bottles - All Sizes
From 1 to a Carload

Serving entire chemical industry
over 35 years

5, 6½ &
13-Gal.

PLASTIC

BOTTLES

Encased in "POLY-STANDARD"
CARBOY BOXES. Approved ICC-1G.
Durable. Light weight.

Inquiries cordially invited

PRODUCTION

ROHM & HAAS COMPANY
ANNUAL INVENTORY TICKET

1-10 12 No. 3802

21

Lykopen

10 250

2500 60-1401 3266

John Doe

TABULATING COPY

DEPT. COPY

AUDIT TICKET

THIRD PART of new inventory ticket
is gummed.

Sticker Speeds Stock-Taking

As a firm's product line grows, physical inventory-taking becomes complicated, time-consuming, costly. But one large, diversified chemical company—Rohm & Haas—has come up with a new system at its Bristol, Pa., plant that makes the job almost nice.

Finding a system that would meet the requirements of all departments wasn't easy. Yet, M. L. Midway, assistant accounting supervisor at Bristol, developed one that has simplified and speeded up the entire inventory cycle. Key to the system is a three-part inventory ticket designed and made for Rohm & Haas by Moore Business Forms, Inc.

Making It Stick: The first two parts of the ticket are paper; the third part is card stock. Carbon paper allows all three to be filled out simultaneously. Then the three parts are separated with a snap of the ticket stub. The reverse side of part three, on the card stock, is gummed so that it may be stuck to the container, tank or shelf that has been inventoried.

The first part is forwarded to the tabulating department where the information for tabulated inventory re-

SODIUM BICARBONATE, U.S.P.

Specialized Grain Sizes

MONOHYDRATE of SODA

SAL SODA

Technical Service

CHURCH & DWIGHT CO., Inc.

70 Pine Street

New York 5, N. Y.

Phone DIgby 4-2181



HIGHEST PURITY WAXES

for laminating and coating



SHELLWAX®

... fully refined paraffin waxes

Available in a wide melting point range (125-180° F.). These are highly stable with negligible oil content. They provide coatings with high gloss and excellent resistance to water vapor transmission.



SHELLMAX®

... microcrystalline waxes

A range of refined microcrystalline waxes for laminating and coating. The laminating grade has excellent adhesive qualities, is flexible and tough. The coating grade is relatively hard and possesses high blocking characteristics.

Both Shellwax and Shellmax have been thoroughly proven in industry for a wide variety of applications.

SHELL OIL COMPANY

50 WEST 50TH STREET, NEW YORK 20, NEW YORK
100 BUSH STREET, SAN FRANCISCO 6, CALIFORNIA



EMPLOYMENT OPPORTUNITIES

IN THE CHEMICAL PROCESSING INDUSTRIES

- **Displayed Rate**—\$19.50 per inch. Contract rates on request. Advertising inch measures 7/8 inch vertically on one column. Subject to Agency Commission. 3 columns to a page.
- **Closing Date**—Each Tuesday, 11 days prior to publication date.



- **Undisplayed Rate**—\$1.80 a line, minimum 3 lines. To figure advance payment, count 5 average words as a line. 10% discount if full payment made in advance for 4 consecutive insertions. Position wanted ads 1/2 above rate.
- **Box Numbers** count as one additional line.

Send NEW ADS & INQUIRIES to Classified Adv. Div. of Chemical Week; P.O. Box 12, N.Y. 36, N.Y.

CHEMICAL ENGINEERS

For process engineering

Expansion of technical development activities in synthetic fibre division, offers the following opportunities to qualified men looking for broader responsibilities and growth.

CHEMICAL ENGINEERS

—BS, MS, PhD

Graduate engineers with 5 to 15 years diversified experience in process development, production or process engineering on a supervisory level. The duties involve supervising development engineers and pilot plant operators in fibre development projects including process design and process improvement.

Graduate engineers with up to 10 years experience in process development, production or process engineering. Duties will involve working with supervisory staff on development problems including pilot plant operation.

These are permanent positions in Celanese's newly created development laboratory in Charlotte, North Carolina providing year-round attractive living and working conditions. Salary commensurate with education and experience. Please write giving full particulars on age, education, experience and salary requirements to L. H. Hitchens. All replies held in strict confidence.

Celanese CORP. OF AMERICA

P.O. Box 1414, Charlotte, North Carolina

TECHNICAL SALES EXECUTIVE

Long-established grain processor, one of three largest in its industry, seeks qualified representative to make technical sales approach to established customers. Prefer college graduate with degree in chemistry, 28-35, with aptitude for both sales and technical subjects. Sales training experience in chemical processing field helpful. Midwest location. Salary dependent upon qualifications, with unusual growth opportunity leading to sales management. Attractive extras and benefits. Responses treated confidentially. Reply briefly on age, education and experience.

RW 2544 Chem Week

520 N. Michigan Ave., Chicago 11, Ill.

CHEMICAL ENGINEERS

NORTON

RESEARCH POSITIONS on abrasive products, high temperature refractories, and new developments open to men with ability to do creative work.

CHALLENGING OPPORTUNITIES offered in well equipped laboratory with capable staff.

B.S. OR GRADUATE DEGREES in chemistry or chemical engineering, with limited experience.

Please Send Resume To

T. S. Green, Jr.

Assistant Manager of Personnel

NORTON COMPANY

Worcester 6, Massachusetts

Abrasives • Refractories • Grinding Machines
• New Products

CHEMIST

SPECIALTIES OR WAX EMULSIONS

We require a man experienced in the development of waxes, polishes, or other chemical specialties. Must be able to test against specifications. Age under 40 preferred, but "know how", initiative, and determination to grasp opportunities is the prime requisite.

We suggest you investigate this opportunity afforded by one of the most modern and up to date laboratories of its kind. Congenial environment, company paid for retirement program, and a liberal salary arrangement to the right man, make this a very worthwhile proposition.

Please phone Mr. C. W. McDermott,
Trinity 7-6200

Franklin Research

5134 Lancaster Ave., Phila. 31, Pa.

RESEARCH AND DEVELOPMENT

CHEMIST

IN METROPOLITAN BOSTON

Opportunity in CENTRAL RESEARCH LABORATORY for graduate chemist with several years' experience in the formulation of water and solvent base elastomeric industrial adhesives. Experience in organic coatings technology also of value.

Please give complete background and state salary requirement.

COMPO CHEMICAL CO., INC.

125 Roberts Rd., Waltham 54, Mass.

Available

MANUFACTURERS' REPRESENTATIVES SERVING CHEMICAL PROCESS INDUSTRIES

Well established manufacturers' representatives concentrating on sales in the chemical process industries desire an additional line harmonious with existing representation of: specialized fabricated process equipment, crushers, grinders, continuous and batch heat-treating furnaces, packaging equipment.

Territory: New York, New Jersey, Pennsylvania, Delaware, with headquarters in Metropolitan NYC area. Please reply to:

Edward F. James, Pres.
Technical Sales Associates

29 Park Court, Verona, New Jersey

Newly formed division of major chemical company requires services of a

SENIOR MARKET RESEARCH MAN

with thermoplastic resin experience

Should have had minimum of 3 years experience in responsible position in market research.

Location in greater New York area
Extensive fringe benefits
Excellent opportunity to get in on the ground floor and grow with a new project whose future is literally unlimited.

Send complete resumé to

P-2448-Chemical Week

Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

PATENT ATTORNEY

Petroleum and petrochemical research organization has opening for man preferably not over 35 with a bachelor's degree in chemical field and LLB or equivalent. Reading knowledge of French and German desirable. Several years' experience in patent law or Patent Office desired. Please send complete resumé of background and experience, including salary expected, to Employment Supervisor,

SHELL DEVELOPMENT COMPANY
EMERYVILLE 8, CALIFORNIA

PROCESS ECONOMISTS

Expanding industrial economics department in rapidly growing chemical center in southwest requires process economists.

Background: 3-10 years industrial process experience.

Education: Chemistry or chemical engineering, with training in business administration or economics.

Work involves techno-economic analysis of a broad range of process industry problems: Market studies, plant location studies, process evaluation, industry surveys. Unparalleled opportunity for growth commensurate with ability. Excellent living and working conditions.

Write

S. J. Keane

Southwest Research Institute
Box 2296, San Antonio 6, Texas

PROCESS ENGINEER

OPPORTUNITY OFFERING EXCELLENT FUTURE POTENTIAL FOR CHEMICAL ENGINEER WITH 3-5 YEARS' EXPERIENCE IN PROCESS ENGINEERING IN CHEMICAL INDUSTRY. INITIAL POSITION INVOLVES DEVELOPMENT OF NEW MANUFACTURING PROCESSES AND IMPROVEMENT OF EXISTING ONES FOR PROCESSING INDUSTRIAL CHEMICALS FROM SOYBEANS. GOOD SALARY. LIBERAL EMPLOYEE BENEFITS. CHICAGO LOCATION. SUBMIT PERSONAL RESUME AND DETAILS OF EXPERIENCE TO:

THE GLIDDEN COMPANY
900 Union Commerce Building
Cleveland 14, Ohio
Attention: G. A. Sutton

FLOOR TILE CHEMIST

Wanted

Experienced manufacture vinyl tile. Insurance, Hospitalization, and retirement. Replies treated confidentially.

P 1922 Chemical Week
520 N. Michigan Ave., Chicago 11, Ill.

Positions Wanted

Technical Sales, B.S., Chemistry, 1954. Excellent collegiate background. Limited but valuable experience in sales and personnel supervision. Due for separation from U.S. Army January 1957. PW-2558, Chemical Week.

Attorney-executive, 30's, cum laude law, college. Penna, N.Y. bars. Now counsel, officer chemical corp. PW-2595, Chemical Week.

Shape your own future in POLYMERS GENERAL MANAGER

MAJOR CHEMICAL FIRM offers a fine position and excellent future for general manager of its new multi-million dollar polymer chemical plant in a pleasant Southern community.

ESSENTIAL:

Degree in chemistry, chemical or mechanical engineering. 15 years' operating experience in chemical industry. Thorough knowledge of organic chemical processes.

DESIRABLE:

Background in large-scale polymer manufacturing. Experience in production of close specification materials. Knowledge of modern managerial techniques.

This is an opportunity to establish yourself with a new project whose future is literally unlimited. Send complete resumé to P-2476 — Chemical Week Classified Adv. Div., P. O. Box 12, New York 36, N. Y.

DETERGENT CHEMIST

Exceptional opportunity with a major producer of commercial cleaning materials.

Require degree in chemistry, chemical engineering or dairy technology with 1—5 years experience in laboratory development and field evaluation of detergents, or industrial plant experience with cleaning materials. Background in bacteriology helpful. Location Painesville, Ohio. Submit complete resumé including academic record to:

Personnel Department
Diamond Alkali Company
300 Union Commerce Bldg.
Cleveland 14, Ohio

FOOD CHEMIST

Excellent opportunities—in a financially stable yet growing manufacturing organization—are offered to graduate chemists with extensive research and development experience in the dairy, baking or cereal industries.

Located in metropolitan New York, our progressive company policy provides many employee benefits including life insurance and retirement plan.

Please forward detailed resume of experience, education and salary requirements. All replies confidential. Our employees have been informed of this ad.

Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.
P 2496 Chemical Week

TILING ENGINEER WANTED

Vinyl Asbestos or Vinyl

Excellent opportunity for man having at least two or three years experience. Liberal Pension & Hospitalization program. Location Midwest.

P 1925 Chemical Week
520 N. Michigan Ave., Chicago 11, Ill.

MANAGER of COSMETIC RESEARCH and DEVELOPMENT

Large long established and expanding Cosmetic Company with multi-plant operations desires high caliber capable man to head staff of chemists in developing new products and improving current ones. A truly outstanding opportunity.

Laboratory located in suburban community in New York State, approximately 35 miles from New York City.

Applicant must be graduate chemist with Masters Degree, and preferably with Ph.D. Degree, under 45 years of age, and possess at least five years experience in product and process development in same or related fields.

All applications will be treated with strict confidence.

Please submit complete resumé, including salary required to:

P-2604—Chemical Week Classified
Adv. Dept., P.O. Box 12, N.Y. 36, N.Y.

TECHNICAL SALES POSITION

Man for technical sales service. Experience in formulating industrial cleaners essential. Manufacturing sales experience an asset. Management growth opportunities. Reply held confidential.

P. W. Bauman
Monsanto Chemical Company
710 No. 12th Blvd.
St. Louis 1, Mo.

TRACERS TO THE CHEMICAL PROCESSING INDUSTRIES

- USED/SURPLUS EQUIPMENT
- CHEMICALS WANTED/OFFERED
- Displayed Rate—\$16.50 per inch. Contract rates on request. Advertising inch measures 1/8 inch vertically on one column, 3 columns to a page. Not subject to Agency Commission.
- Box Numbers count as one additional line in undisplayed ads.

- SPECIAL SERVICES
- BUSINESS OPPORTUNITIES
- Undisplayed Rate—\$1.80 a line; minimum, 3 lines. To figure advance payment, count 5 average words as a line. 10% discount if full payment is made in advance for 4 consecutive insertions.
- Closing Date—Each Tuesday, 11 days prior to publication date.

Send NEW ADS & INQUIRIES to Classified Adv. Div.
of Chemical Week; P.O. Box 12, N.Y. 36, N.Y.

SURPLUS CALCIUM CARBONATE

Pulverized high calcium limestone ready for immediate and continuous shipment in large quantities.

Available in bulk or bags.

HIGH in Calcium Carbonate

LOW in impurities

LOW in price

Write FS1085 Chemical Week
330 W. 42nd St., New York 36, N. Y.

SURPLUS WANTED

CHEMICALS, PHARMACEUTICALS, OILS
PLASTICIZERS, RESINS, DYES
SOLVENTS, PIGMENTS, ETC.

CHEMICAL SERVICE CORPORATION
96-02 Beaver Street, New York 5, N. Y.
HANOVER 2-6970

BUYERS OF SURPLUS

CHEMICALS—OILS—SOLVENTS

DRUGS—RESINS—WAXES
PLASTICS—COLOR—ETC.

BARCLAY CHEMICAL COMPANY, INC.
75 Varick Street New York 13, N. Y.
WORTH 4-5120

SURPLUS CHEMICALS WANTED

Chemicals—By-Products—Plasticizers

Pigments — Resins — Solvents

CHEMSOL, INC.
70 Dod Street, Elizabeth, N.J. EL 4-7654

MONTMORILLONITE

We own mining property in Nevada containing approximately 1,000,000 tons of highest quality Montmorillonite Clay. Property has been thoroughly surveyed, drilled and blocked out. Clay has been tested and proven highly efficient for catalyst or filtering. We desire to lease or sell property.

KINNEY INDUSTRIES
410 Solano Ave., Los Angeles 12, Calif.

Plant for Rent

Paterson, N.J. One story brick, 26,000 ft. sprinklered high pressure steam, RR siding, underground storage tanks, fenced yard, unrestricted. PFR-2174, Chemical Week.

DON'T FORGET

the box number when answering advertisements. It is the only way we can identify the advertiser to whom you are writing.

For Sale

F. J. Stokes Double Effect still, 250 GPH, type 316 stainless steel. Perry, 1415 N. 6th St., Phila. 22, Pa.

Unused Patterson Foundry 5' dia. x 22' long Ball Tube Mill, Manganese Steel liner, 200 HP motor. Perry Eqpt. Corp., 1415 N. 6th St., Phila. 22, Pa.

Struthers Wells 400 gal. type 316 Stainless Steel Reaction Kettle, 100# int. pr., 140# jkt. pr.: 7 1/2 HP agitator drive. Perry, 1415 N. 6th St., Phila. 22, Pa.

Surplus Fertilizer Mixing and Handling equipment for sale complete list of machinery available at Berkeley and Los Angeles plants will be sent on request to: Pacific Guano Company 1832 Second Street, Berkeley 10, California. Telephone THornwall 5-7120 TWX: OA 430.

Business Opportunities

Cincinnati, Ohio, storage space up to 5 m. sq. ft. available with or without services, 27-year-old company, experienced chemical men, can store, ship or sell. BO-2222, Chemical Week.

Old established English Chemical Manufacturing Company interested in manufacturing and/or marketing the products of U.S. Chemical Manufacturers in Great Britain under license arrangements. BO-2606, Chemical Week.

THIS TRACER SECTION

can be used whenever you are looking for or offering

EQUIPMENT
SUPPLIES
OPPORTUNITIES
PLANTS
CHEMICALS

The rates are low—just call or write

tracers
CHEMICAL WEEK
P.O. Box 12
NY 36 NY
Longacre
4-3000

MANAGEMENT SERVICES

- General Consulting
- Management
- Patents
- Systems Engineering
- Chemical & Bacteriological Analysis
- Instrumentation
- Equipment Design
- Catalyst Development
- Translation

MACCO CORPORATION

Refinery and Chemical Division
Engineering, Design, Drafting,
Construction, Process Engineering
for
Petroleum Refineries, Chemical
and Petro-Chemical Plants
14409 So. Paramount Blvd., Paramount,
(Los Angeles) Calif. Phone: NEVada 6-1261

JAMES P. O'DONNELL

Engineers

Professional Engineering for the
Petroleum and Process Industries

39 Broadway
New York City

Bowie Bldg.
Beaumont, Texas

Robinette Research Laboratories, Inc.

Industrial Research : : Consultation
Technical and Economic Surveys : : Product
Development : : Chemical Market Research

16 East Lancaster Avenue, Ardmore, Pa.
Tel. Midway 2-6457

SIRRIE

ENGINEERS

Plant design & Surveys covering Chemical Electrochemical and Metallurgical Production; Industrial Waste Disposal; Water Supply & Treatment;

Analysis & Reports

J. E. SIRRIE CO.

Greenville

South Carolina

Wisconsin Alumni Research Foundation

Project Research Consultation and Production Control Service in Biochemistry, Chemistry, Bacteriology, Pharmacology, and Insecticide Testing and Screening.

Write for price schedule

Wisconsin Alumni Research Foundation
P.O. Box 2059-G • Madison 1, Wisconsin

CONSULT

THESE SPECIALISTS...

when you need professional assistance in solving difficult problems. Their specialized knowledge and broad experience can prove invaluable in saving both time and money for you.

CHEMICAL WEEK invites other consultants to list the special services they offer on these pages.

PRODUCTION

ports is taken. The second part is retained in the department where the material is located; it's used for stock rotation, verifying production records.

This system makes it easy to check counts and trace them through to the final inventory reconciliation. Rohm & Haas finds that tickets remain attached to containers, even in outdoor storage areas, and checkers following the inventory-takers have no trouble identifying the material or verifying counts.

Also, the streamlined form requires a minimum amount of information from those taking inventory, eliminates transcription errors, since it is written only once. And since the tickets are prenumbered to insure that all sets are issued or returned, a complete control of the system is maintained.

The new procedure, with its simplicity, speed and easy checking methods, is now saving time and tempers.

British Push for Coal

The first steps toward processes to utilize the chemicals in British coal were revealed recently at an international conference on chemical engineering in the coal industry. Setting: the National Coal Board's research center near Cheltenham, England.

Papers describing British fluid-bed oxidation techniques, British and French fluid-bed carbonization techniques, and tar yields of the processes were conference highlights. These techniques were seen in action at two research-center pilot plants:

- Fluid-bed oxidation plant, completely automated, rated at one ton per hour. The plant consists of a three-column system—the first column preheats, fluidizes the powdered coal with hot, nonreactive gas; the reactor column next oxidizes this material at temperatures below 1,000 C; the third column cools with air and water spray.

This treatment improves caking properties, prevents coal from becoming plastic during briquetting. It's expected to open Britain's major coal fields—until now unsatisfactory for smokeless fuel production—to briquetting. Too, the technique is being studied for removing smoke-forming components and recovering them as gases and liquids for coal-chemicals manufacture.

- Fluid-bed carbonization plant, rated at 100 lbs./hour. The process

Quality + Distribution = Service

STOCK POINTS

Seattle
Portland
Sacramento
San Francisco
Fresno
Los Angeles
Houston
Dallas



STOCK POINTS

Boston
Detroit
New York
Philadelphia
Chicago
Baltimore
Norfolk
Savannah
New Orleans

*These stock points are your assurance of quality materials . . .
When you want them . . . where you want them . . .*

IMPERIAL CHEMICAL INDUSTRIES LIMITED

Ammonium Chloride, Grey and White • Ammonium Bicarbonate USP • Ammonium Carbonate • Bleaching Powder Tropical 34%-36% Cl₂ • Calcium Formate • Chlorinated Paraffin 42% Cl₂ • Chlorinated Rubber • Copper Cyanide • Potassium Cyanide • Sodium Cyanide, all grades • Zinc Cyanide • Sodium Aluminate • Sodium Bicarbonate USP and Tech. • Sodium Carbonate Monohydrate • Sodium Perborate • Trichloroethylene, all grades • Urea, 46% Tech. • 3,3,5 Trimethyl Hexanol • 2:4 Dimethyl 6-Tertiary Butyl Phenol

PETER SPENCE & SONS LIMITED

Aluminum Sulphate, Iron Free • Ammonia Alum • Butyl Titanate • Potassium Alum • Titanium Potassium Oxylate • Cobalt Molybdenum Catalysts

DEEPWATER CHEMICAL CO., LIMITED

Iodine, Resublimed USP and Reagent • Potassium Iodide, USP and Reagent • Potassium Iodate, USP and Reagent • Special Potassium Iodide Mixtures • Cuprous Iodide, Tech.

LCL quantities available from Distributor Stocks in your area. This is only a partial listing of the items we offer. Write for complete product listing.

Chemical Manufacturing Co., Inc.

714 W. Olympic Boulevard
Los Angeles 15, Calif.
Richmond 9-4379

444 Madison Avenue
New York 22, N. Y.
Murray Hill 8-8700

114 Sansome Street
San Francisco 4, Calif.
Vukon 6-3787

McGraw-Hill Mailing Lists Will Help You

- Merchandise your advertising • Conduct Surveys
 - Get leads for your salesmen
- Get inquiries about your product or service
- Pin-point geographical or functional groups
- Sell Direct
 - Build up weak territories
 - Aid Dealer Relations

Direct Mail is a necessary supplement to a well rounded Business Paper Advertising program.

600,000 actual names of the top buying influences in all the fields covered by the McGraw-Hill publications make up our 150 mailing lists. These are built and maintained primarily for our own use, but they are available to you for Direct Mail purposes. Pick out a list of YOUR prospect from our Industrial Direct Mail Catalogue.

More and more, progressive companies are using Industrial Direct Mail regularly as an advertising medium. They effectively allocate a portion of their concentrate on the best business publication.

For complete, detailed information about our service, fill in the coupon or write for your copy of our free Business and Industrial Direct Mail catalogue.

for Results



Mc GRAW-HILL
DIRECT MAIL LIST SERVICE

Direct Mail Division, McGraw-Hill Publishing Co., Inc.
330 West 42nd St., N. Y. 36, N. Y.

Please forward my free copy of the McGraw-Hill
"Industrial Direct Mail Catalogue."

Name _____

Company _____

Address _____

City _____ State _____

PRODUCTION

depends on external heating, operates at 500 C, produces a semicoke or char. The French have already carried this process to the larger pilot-plant stage, have a 1-ton/hour plant at the Marienau Experimental Station. They are now building an 8-tons/hour plant.

An important difference between this low-temperature semicoking process and the higher-temperature coke-oven process is the former's higher yield of tar acids—30-40 gal./ton,

against 10-12 gal./ton for coke ovens. But only 25% of the former's tar acids are low-boiling (below 220 C) cresols, xlenols, catechols and phenols that make up the bulk of the present coal chemical market. Most of the tars are high-boiling—and at present there is no established, economical means of converting them into low-boiling products.

But, the British aren't the only ones to face this problem. Pittsburgh

Consolidation Coal Co. has been working on coal chemicals for some time. And Alcoa and Texas Power & Light are working with lignite tars at Rockdale, Tex., that are even more difficult to process.

Nevertheless, the British are optimistic, believe that—by the time full-scale plants are ready—the value of tar products that are won by methods now being researched will exceed the value of the coal.

CHEMICAL WEEK • ADVERTISERS INDEX

AIR PRODUCTS, INC. 67	HERCULES POWDER CO. 26
Agency—Thoma & Gill, Adv.	Agency—Fuller & Smith & Ross, Inc.
ALLIS-CHALMERS MANUFACTURING CO. 4	HUDSON PULP & PAPER CORP. 41
Agency—Compton Adv. Inc.	Agency—Clangio Adv., Inc.
AMERICAN FLANGE & MANUFACTURING CO., INC. 85	JEFFERSON CHEMICAL CO., INC. 7
Agency—Freilwald & Coleman, Inc.	Agency—Hazard Adv. Co.
AMERICAN MINERALS SPIRITS CO. 12	KELLOGG CO., THE M. W. 3rd Cover
Agency—Leo Burnett Co., Inc.	Agency—Fuller & Smith & Ross, Inc.
ARMOUR & CO. 72-73	KIDDER, PEABODY & CO. 80
Agency—Foote, Cone & Belding, Inc.	Agency—Doremus & Co.
ATLAS POWDER CO. 59	KOPPERS CO., INC. 79
Agency—The Altken-Kynett Co.	Agency—Batten, Barton, Durstine & Osborn, Inc.
BAKELITE CO., DIV. OF UNION CARBIDE & CARBON CORP. 37	LINDSAY CHEMICAL CO. 75
Agency—J. M. Mathes, Inc.	Agency—C. Franklin Brown, Inc.
BLOCKSON CHEMICAL CO. 60	LUCIDOL DIV., WALLACE & TIERNAN, INC. 80
Agency—William Balsam, Adv.	Agency—Barber & Brullard, Inc.
BROWN BOVERI CORP. 2	METAL & THERMIT CORP. 34
Agency—Corbin Adv. Agency	Agency—RAF Advertising, Inc.
CARBIDE & CARBON CHEMICALS CO., DIV. OF UNION CARBIDE & CARBON CORP. 4th Cover, 88	MICHIGAN CHEMICAL CORP. 20
Agency—J. M. Mathes, Inc.	Agency—Wesley Aves & Assoc., Inc.
CHEMICAL MANUFACTURING CO. 99	MINERALS & CHEMICALS CORP. OF AMERICA 29
Agency—The House of J. Hayden Twiss	Agency—Richardson, Thomas & Bushman, Inc.
CHICAGO BRIDGE & IRON CO. 36	MUTUAL CHEMICAL DIV., ALLIED CHEMICAL & DYE CORP. 19
Agency—Russell T. Gray, Inc.	Agency—The House of J. Hayden Twiss
CHURCH & DWIGHT CO. 94	NATIONAL CARBIDE CO., DIV. OF AIR REDUCTION CO., INC. 11
Agency—J. Walter Thompson Co.	Agency—G. M. Basford Co.
CLIMAX MOLYBDENUM CO. 63	NEVILLE CHEMICAL CO. 69
Agency—G. M. Basford Co.	Agency—Bond & Starr, Inc.
COLUMBIA SOUTHERN CHEMICAL CORP. 87	NITROGEN DIV., ALLIED CHEMICAL & DYE CORP. 16
Agency—Ketchum, McLeod & Grove, Inc.	Agency—G. M. Basford Co.
COMMERCIAL SOLVENTS CORP. 3	NORFOLK & WESTERN RAILWAY 13
Agency—Fuller & Smith & Ross, Inc.	Agency—Houck & Co.
COYLE LINES, INC. 90	PENNSYLVANIA INDUSTRIAL CHEMICAL CORP. 91
Agency—Sewell Adv. Agency, Inc.	Agency—Downing Industrial Adv., Inc.
CURTISS-WRIGHT CORP. 80	PETRO-TEX CHEMICAL CORP. 35
Agency—Burke-Dowling Adams, Inc.	Agency—James J. McMahon, Inc.
DAVIES NITRATE CO., INC. 78	PITTSBURGH COKE & CHEMICAL CORP. 57
Agency—Malcolm Severance Co.	Agency—W. S. Walker Adv., Inc.
DAVISON CHEMICAL CO., DIV. OF W. R. GRACE & CO. 53	PITT-CONSOL CHEMICAL CO. 74
Agency—St. Georges & Keyes, Inc.	Agency—W. S. Walker Adv., Inc.
DIAMOND ALKALI CO. 32	PUBLICLICKER INDUSTRIES, INC. 84-85
Agency—Fuller & Smith & Ross, Inc.	Agency—Al Paul Lepton Co., Inc.
DOW CHEMICAL CO., THE 33, 81	REICHOLD CHEMICALS, INC. 42-43
Agency—MacManus, John & Adams, Inc.	Agency—MacManus, John & Adams, Inc.
DOWELL, INC. 1	RHODIA, INC. 68
Agency—MacManus, John & Adams, Inc.	Agency—The House of J. Hayden Twiss
DUREZ PLASTICS DIV., HOOKER ELECTRO CHEMICAL CO. 77	ROHM & HAAS CO. 47
Agency—Comstock & Co.	Agency—Arndt, Preston, Chapin, Lamb & Keen, Inc.
EASTERN STATES CHEMICAL CORP. 5	SHELL OIL CO. 95
Agency—Ruthrauff & Ryan, Inc.	Agency—J. Walter Thompson Co.
EASTERN CHEMICAL PRODUCTS, INC. .. 38	SOLVAY PROCESS DIV., ALLIED CHEMICAL & DYE CORP. 2nd Cover
Agency—Fred Wittner Adv.	Agency—Atherton & Currier, Inc.
ESSO STANDARD OIL CO. 31	SOUTHERN STATES IRON ROOFING CO. 92
Agency—McCann-Erickson, Inc.	Agency—George & Glover, Inc.
FRITZSCHE BROTHERS, INC. 78	STAUFFER CHEMICAL CO. 8-9
FRONTIER CHEMICAL CO. 40-52	Agency—John Mather Lupton Co.
Agency—The McCormick-Armstrong Co.	TITANIUM PIGMENT CORP. 10
GENERAL AMERICAN TRANSPORTATION CORP., AIRSLIDE CARS DIV. 82	Agency—Doyle, Kitchen & McCormick, Inc.
Agency—Weiss & Geller, Inc.	UNION BAG-CAMP PAPER CORP. 1
GENERAL AMERICAN TRANSPORTATION CORP., TERMINAL DIV. 6	Agency—Smith, Hagel & Knudsen, Inc.
Agency—Weiss & Geller, Inc.	UNITED BOX & LUMBER CO. 94
HALL CO., THE C. P. 30	Agency—Ira S. Kahn Co.
Agency—Crutenden & Eger, Assoc.	U.S. INDUSTRIAL CHEMICALS CO. 93
HARCHEM CHEMICAL DIV. OF WALLACE & TIERNAN, INC. 14	Agency—G. M. Basford Co.
Agency—Branstater Assoc., Inc.	VITRO CORP. 48
	Agency—Molesworth Assoc.

August 11, 1956

WINTHROP LABORATORIES, INC. 90
Agency—The Thompson Koch Co.
WOLF & CO., JACQUES 58
Agency—Fiedl & Frede, Inc.
WYANDOTTE CHEMICAL CORP. 70-71
Agency—Brooke, Smith, French & Dorrance, Inc.

tracers SECTION

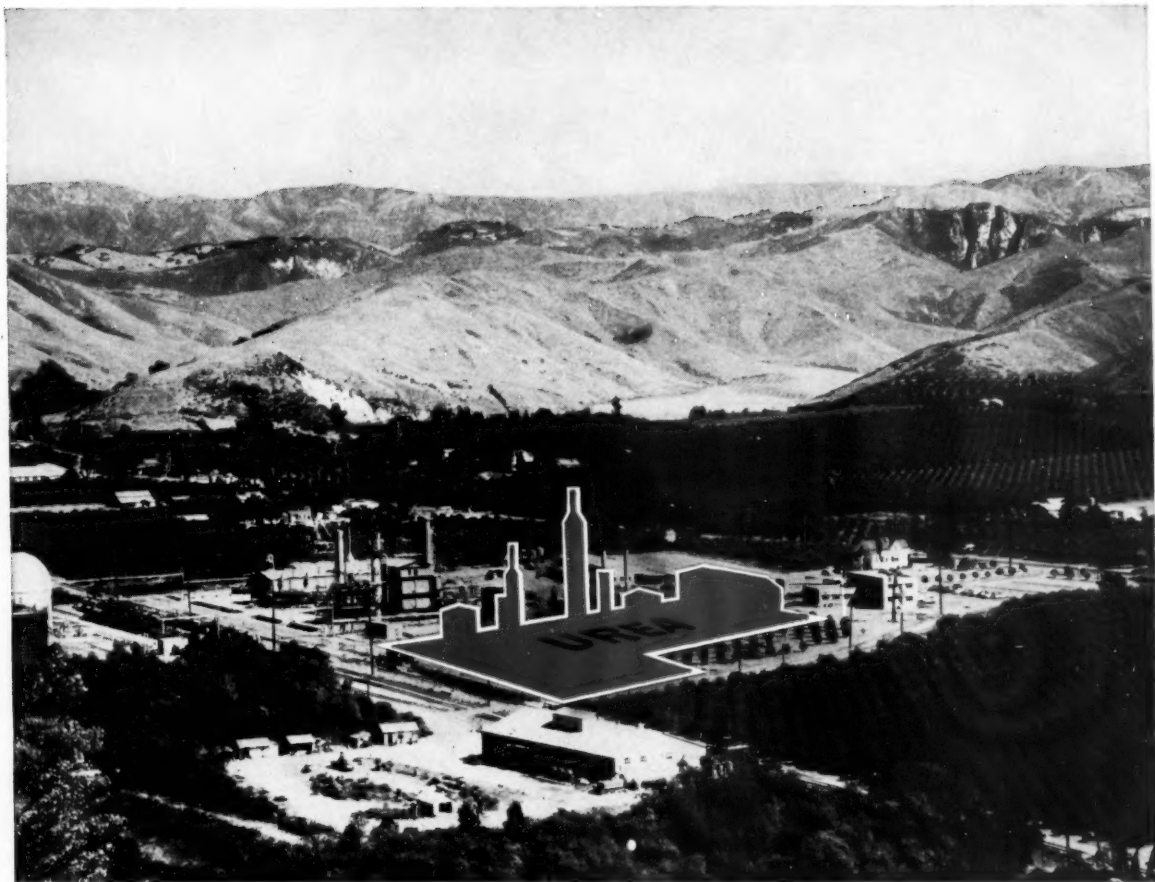
(Classified Advertising)

F. J. Eberle, Business Mgr.

CHEMICALS: Offered/Wanted 98
EMPLOYMENT: 96 & 97
EQUIPMENT: Used/Surplus New For Sale 98
WANTED 98
MANAGEMENT SERVICES 98
SPECIAL SERVICES 98

ADVERTISING STAFF

Atlanta 3	Robert H. Powell
	Rhodes-Haverty Bldg., Walnut 5778-2383
Boston 16	350 Park Square Building
	Hubbard 2-7160
Chicago 11	Alfred D. Becker, Jr.,
	Francis E. Stewart, 520 N. Michigan Ave., Mohawk 4-5800
Cleveland 15	Vaughn K. Dissette,
	1510 Hanna Bldg., Superior 1-7000
Dallas 2	Gordon L. Jones, Adolphus Tower Bldg., Main & Ackard Sts., Prospect 7-5064
Detroit 26	856 Penobscot Bldg., Woodward 2-1798
London	H. Lagler, McGraw-Hill House, 95 Farrington St., E.C. 4, England
Los Angeles 17	Peter Carberry, 1125 West Sixth St., Madison 6-9351
New York 36	Knox Armstrong, P. F. McPherson, Charles F. Onasch, L. Charles Todaro, 330 West 42 St. LOngacre 4-3000
Philadelphia 3	William B. Hannum, Jr., Architects Bldg., 17th & Sansom Sts., Kittenhouse 6-0879
Pittsburgh 22	919 Oliver Bldg., Atlantic 1-4767
San Francisco 4	William C. Woolston, 68 Post St., Douglas 2-4630
St. Louis 8	3315 Olive St., Continental Bldg., Jefferson 5-4867



SHELL CHEMICAL IS ADDING SOMETHING NEW

Next door to its ammonia plant at Ventura, California—in the heart of a rich agricultural area, Shell Chemical Corporation has picked the logical location for its new urea plant. The M. W. Kellogg Company worked with Shell Chemical in engineering the project, and is now well ahead with construction. The plant will be completed this fall. M.W. Kellogg also engineered and built Shell Chemical's adjacent 150 ton/day ammonia plant, from which raw materials will be piped into the urea facilities.

Designed to produce 100 tons of high purity urea per day, the Ventura plant will be the chemical industry's first urea manu-

facturing facilities on the West Coast. It will also be the first urea plant in the entire U.S. to use the Montecatini process which, in addition to being considered the most efficient yet developed, overcomes the severe corrosion problems encountered with conventional urea processes.

If your company is considering new or expanded production of petrochemicals—especially of urea, ammonia, ethylene, phenol, or butadiene—M. W. Kellogg's long and broad experience with hydrocarbons in these areas is your assurance of low initial and operating costs, as well as high yields.



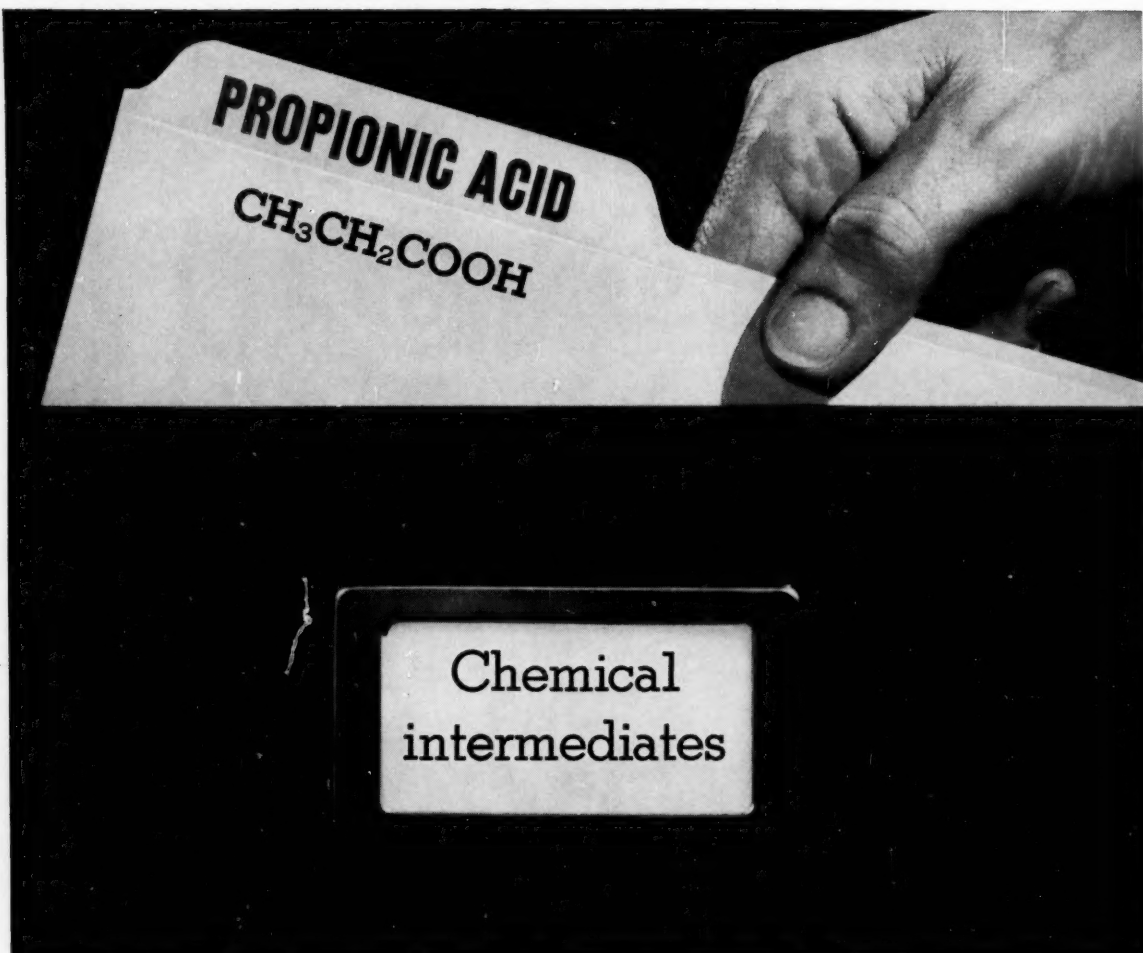
PETROCHEMICAL PROCESSES AND PLANTS

CHEMICAL PROCESS DIVISION

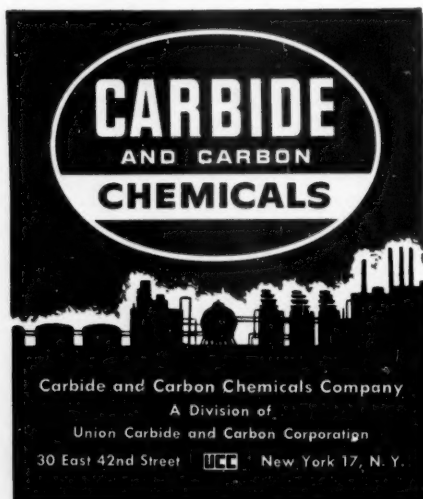
THE M. W. KELLOGG COMPANY, 711 THIRD AVENUE, NEW YORK 17, N. Y.

A SUBSIDIARY OF PULLMAN INCORPORATED

*The Canadian Kellogg Company Limited, Toronto • Kellogg International Corporation, London • Societe Kellogg, Paris
Kellogg Pan American Corporation, New York • Companhia Kellogg Brasileira, Rio de Janeiro • Compania Kellogg de Venezuela, Caracas*



PROPIONIC ACID — now available
from CARBIDE in tank car quantities...



Propionic acid is an important intermediate for the synthesis of many new and useful products such as . . .

- Calcium and sodium propionate mold growth inhibitors for bakery products
- Cellulose propionate thermoplastic molding materials
- Intermediates for the manufacture of general-purpose herbicides
- Esters for the manufacture of flavors and floral aromas

Call or write your nearest CARBIDE representative now for further information and a sample of propionic acid. In Canada: Carbide Chemicals Company, Division of Union Carbide Canada Limited, Montreal.